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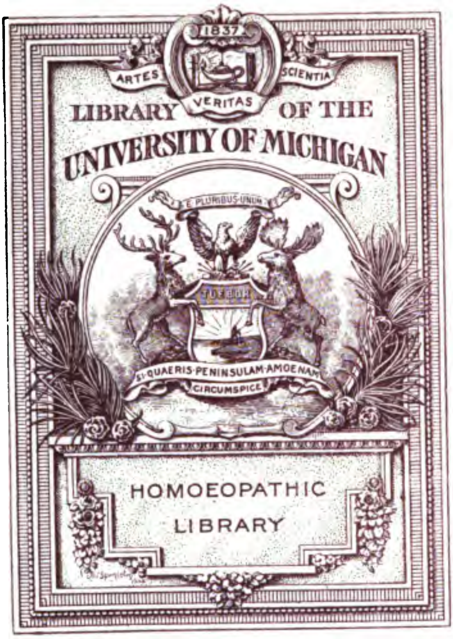

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ORIGINAL ARTICLES.

DIABETIC DETERIORATION.

CLIFFORD MITCHELL, M. D.
CHICAGO, ILL.

Instead of presenting a paper on the treatment of dropsy, about which I have nothing particularly new to report, other than will be found in my forthcoming book on Renal Therapeutics, I beg leave to send in to the Minnesota Society a few thoughts on a subject which is probably new to many of you, and certainly to myself. The practice of medicine is full of surprises. Dynasties of theorists fall, and thrones of authorities crumble. The naming, the classifying, and the describing of diseases, must be jealously watched for fear that in our endeavor to pigeon-hole our diagnosis we forget the patient himself altogether.

Of what disease is albuminuria a symptom? Any medical student will answer "Bright's disease." Of what disease is sugar in the urine a symptom? Diabetes mellitus, of course. Broadly speaking, these answers are correct, and no doubt would be marked perfect on an examination paper. But after a good many surprises in my study of renal diseases, I have finally come to the conclusion that albuminuria is sometimes an early symptom of diabetes mellitus, or at any rate a phenomenon often preceding the

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advent of glycosuria, while sugar is certainly sometimes found in the urine of those cases which, sometime subsequently, die of nephritis.

The important point is just this: Modern medical education, with its classifying tendency, holds our nose down to the grindstone of the apparent lesion so closely, that we may overlook altogether the diathesis of the patient. For example, there comes into my office some day, a man who has been rejected by a life insurance company, because of albuminuria. I examine his urine and, sure enough, I find albuminuria and cylindruria, low specific gravity, deficient solids, and the general make up of the urine of chronic interstitial nephritis. But in other respects he is doing quite well, as the slang phrase is, and is singularly free from the cardiac and vascular changes which characterize contracting kidney. In fact he has no symptoms whatever of chronic nephritis of any kind, barring the urine. Now he wants his insurance policy, and what is to be done with him? Naturally enough in the light of our best knowledge, we cut down his supply of meat, encourage him in the use of milk, and vegetables, and give him, merc. cor. in small doses, three or four times daily. What happens? In about a month we find a little sugar in his urine which gradually increases until it is four per cent or more. We throw overboard our theory of chronic interstitial nephritis, put him on strict diabetic diet, and not only does the sugar decrease, but the albumin (previously found), decreases as well.

This sort of thing is upsetting to our pigeon-hole view of albuminuria, the significance thereof, and the dietetics thereof. After a few cases in my experience like the one above described, a very uneasy feeling comes over me when a patient presents himself with symptomless albuminuria which he wishes to get rid of.

But I have purposely omitted certain details for the reason that I have not myself paid sufficient attention to them in the past, and wish to emphasize them now. In the first place most of these albuminuric-glycosurics-in-disguise, are fat, and I have learned to suspect every fat man of having diabetes mellitus concealed about him somewhere; and second, most of them aver that meat suits their digestion better than carbohydrates. Here we have three points about the particular cases in question: fat persons with an intolerance for carbohydrates with albuminuria and a slight cylindruria. Does it mean Bright's disease in any form? Most likely not, if there are no other evidences of that malady; more likely diabetes mellitus; most probably diabetes mellitus in a prodromal stage, if you can find history of that disease in the patient's family.

After seeing several cases of this kind develop into full fledged diabetics with almost total disappearance of the albuminuria and cylindruria, it was with no small satisfaction that I picked up a monograph by Dr. Heinrich Stern of New York, in which the following ideas are advanced: diabetes mellitus is probably only indicative of a single stage in the process of a certain type of molecular or somatic deterioration. It is not likely that it developes independently and spontaneously. There are three stages of the deterioration:

1st. The prodromic or preglycosuric stage. 2nd. The period of glycosuria or diabetes mellitus proper. 3rd. The post-glycosuric stage or period of ethyl-diacetic acid poisoning.

The importance of recognizing the prodromia or preglycosuric stage can readily be seen. The first point is to establish the family history of diabetes which is not hereditary in itself, but the diabetic diathesis is. Given then a person in whose family diabetes mellitus has existed or exists, how are we to recognize the prodromal stage of the disorder in the individual in question? By combining Stern's observations with my own, the following rules may be laid down:

1st. The individual is fat. 2nd. He has disturbances of digestion and intolerence of carbohydrates. 3rd. There are sickening pains, not of a colicy nature, yet in the epigastric region, increasing after eating, and worse on pressure. So much we both agree upon. In addition I find two conditions that Stern does not speak of, as follows: 4th. Slight albuminuria and cylindruria. 5th. A tendency to void a little sugar in the urine at certain hours in the day, increased by eating or drinking articles rich in glucose.

Stern speaks of a number of symptoms as diminution of sexual desire, great nervous irritability, hypochrondriasis, cutaneous disorders and so on. Now when the second stage of the deterioration, or true diabetes mellitus itself appears, the patient loses flesh, has excessive appetite, and thirst. The urine increases in volume, and the albumin disappears to a trace.

The albumin, which in the beginning is but slight, becomes so small in the large volume of urine, that it may escape observation altogether, and we are in the habit of paying little attention to it anyway, because we are taught that diabetic urine most always contains a trace of albumin, so we accept it contentedly and think nothing of it.

The question of treatment of these prodromal cases, is a highly important one, as an ounce of prevention in the present may be worth more than several pounds of sugar in the future.

The essentials of treatment in the preglycosuric stage are as follows:

1st. Diminish the food supply while insisting on regularity of meals.

2nd. Prohibit nothing except alcoholic drinks, beer, and malted beverages.

3rd. Advise milk and American cheese, particularly the latter.

4th. Give the patient a radical change of climate.

5th. If a change of climate can not be had, advise air-baths, i. e. gymnastics, or even sitting still in a more or less nude state, in a room the temperature of which is just high enough so that the patient avoids being chilled.

For remedies, Stern advises arsenic and gold, but I think there is much in these cases that suggests uranium nitrate as being the closest indicated remedy in many ways. We know that it is recommended by our symptomatologists for cases originating, as they say, in "dyspepsia or digestive derangements," and the latter are a feature in the prodromal stage above described. Arsenic is indicated chiefly for emaciated diabetics, and I do not see that it fits the cases so well in the prodromal stages as later when the hunger, thirst, loss of strength, and flesh, so often point to it as the remedy. Of aurum, however, I think better than arsenic for the prodromal stage owing to the mental symptoms, which in some cases are characteristic. There is a good deal in symptomatology, as pathology in slowly finding out, and one of the things which makes the study of pathology a necessity, is that it explains to the inquiring mind why symptomatology often cures.

THE SIGNIFICANCE AND INTERPRETATION OF SYMPTOMS.

W. B. Webb, M. D.

BEAVER DAM, WIS.

To him who is a believer in the homœopathic law of similia, the word symptom means much more than to our neighborly friend who is pleased to call himself "Regular." To the mere symptomatologist, a member of our school who has a blind faith in symptoms and nothing else in medicine save the indicated remedy, a symptom is almost sacred. A symptom has been defined as a functional or vital phenomenon of disease. It is an incomplete index to some condition. A sort of marginal reference to other symptoms, which in their totality indicate the homœopathic remedy.

In the beginning of this paper I wish to disclaim all desire or intention of making any attack on homœopathy or questioning the value of the "totality of symptoms," as a means of finding the indicated remedy. I simply wish to call attention to the vital importance of thoroughly analyzing all symptoms before using them, either in the framing of our diagnosis, or as a guide to the remedy. If we always had the time, and the disposition, and the ability to scrutinize with judicial eye, all subjective symptoms as they present, at the same time being impartial in our observation of the objective symptoms, I imagine there would be more correct symptomatic interpretations, and as a result more effective prescriptions. On the whole, symptoms are troublesome affairs—they often annoy, vex and perplex us as physicians. They torment, irritate and distress the patient. If however, the patients were free from symptoms, the doctors would develop a whole lot of their own—chiefly of a reflex character—traceable to empty pocketbooks.

Without doubt, pain is the most common and most frequently met of all symptoms. It is the *bete noir* of the average human being. Humanity in general, and men in particular, greatly prefer to be excused from this most annoying symptom. To the patient, the significance of a pain may be little except that "it hurts" but to the doctor, it is an ear mark of some particular condition or disease. If we see an individual who is complaining of a lancinating pain in the side, we may be assisted in our diagnosis by the patient's statement, that he has an attack of pleurisy, and wants something to relieve this "cussed pain". The pain in the opinion of the patient may be "cussed." That much may be taken for granted, but it may not be pleuritic. True, the pain is in a region suggestive of a pleuritic difficulty, and on superficial examination we might be tempted to accept the patient's diagnosis.

After a young doctor gets fooled once or twice and has been caught napping two or three times, he ought to get his eye teeth cut, so to speak, and take nothing for granted until he has carefully gone over the ground, and has reasons for the faith that is in him. It would be as sensible to say that a man had a cancer of the stomach, because he had vomited a few times, as to say that one has pleurisy because he has pain in his side. After hearing our patient's description of his pain, and noting his physiognomy, with its telltale story of distress, the thought of pleurisy comes

THE PREVENTIVE TREATMENT OF BRIGHT'S DISEASE.

CLIFFORD MITCHELL, A. M., M. D., 70 STATE ST., CHICAGO.

Reprinted from the Northwestern Sanitarian, April, 1895.

One is predisposed to Bright's disease perhaps in two ways. First, by heredity, and second, by occupation or circumstance. Gouty ancestry is a possible factor in predisposition to Bright's, as is also that of heart disease, syphilis, cancer, and consumption, together, of course, with Bright's disease itself. It is by no means true, however, that family history of these disorders is certain to mean Bright's disease in all descendants, but if of such heritage one should not fail to take ordinary precautions with view to earliest possible recognition of any existing kidney disease.

Occupations, in virtue of which one is liable to Bright's, are those in which alternate heating and chilling of the body occur, those in which the person is continually chilled by wetting, and those in which there is great mental strain and worry. Among my patients have been those from both the humblest and the highest walks of life, both the man who cleans out sewers and the millionaire whose financial responsibilities whiten his hair and disturb his rest.

One who is predisposed to Bright's by heredity or occupation will be further liable to its onset if he live in a climate subject to violent changes in the weather, as, for example, in the vicinity of large bodies of water, like our Great Lakes.

There seem also to be certain periods of life during which one is likely to be attacked. In my experience there are three such periods especially noticeable: Childhood, the marriageable age—including in women the child-bearing period, and that of the gradual decline of the sexual powers—from forty years of age onwards.

Children are subject to acute Bright's disease particularly after eruptive diseases, as scarlet-fever, and also after diphtheria. They may also have acute Bright's without any attack of eruptive fever preceding. It is always wise to examine the urine of children in any obscure illness or fever, especially if there are such symptoms as nausea, vomiting, backache, and prostration.

In the third week after the outset of scarlet fever comes the great danger of acute Bright's. From the 14th to the 22d day the child should be kept warm, quiet and free from excitement of all sorts, no matter how light the attack of scarlatina has been. The diet at this time should be rigidly non-nitrogenous, no meat at all being allowed, the patient subsisting as much as possible on milk, with possibly farina, rice and arrow-root, together with pure spring water.

If in spite of all precautions acute Bright's disease sets in and the patient recover from it, preventive measures must then be taken against the disease becoming chronic. For this purpose removal to a warm, sunny, equable climate, where out-of-door life is possible, is undoubtedly best. If for any reason the patient cannot be removed, continuous administration of iron in small doses together with inhalation of oxygen gas, woolens worn next to the skin, and careful diet, excluding butcher's meat, are next best. Unless the urine be scanty, it is doubtful whether excessive drinking of mineral waters is advisable. At the end of a year, at the latest, albumin should have completely disappeared from the urine. If recovery from acute Bright's takes place, the albumin diminishes usually to a trace in from four to six weeks. As long as it persists, however, we must assume that there is danger of chronic kidney disease and treat the patient accordingly. I have known perfect recovery in cases where a plain trace of albumin could be found for six or eight months after the original attack following scarlet fever.

The saddest cases of chronic Bright's disease are to be seen in young ladies of marriageable age. In my experience the disease is unusually fatal during this period. It is usually attributed to hard study or late hours, and social dissipation, but to my mind it is merely a manifestation of some obscurely hereditary predisposition occasioned by the pelvic congestions of this time of life, though why it should be so fatal I cannot understand. Possibly the difficulty which young ladies of this age find in withdrawing for a time from social enjoyments, and in taking proper precautions, may have something to do with it. Every one knows how careless young people are of all hygienic precautions. There is no malady which can be trifled with to greater disadvantage than Bright's, and it seems likely that the course of things is about as follows: A young woman, predisposed at birth to Bright's or perhaps having not ever completely recovered from acute Bright's following scarlet fever, being exceedingly anxious not to lose certain social enjoyments receives a chill during the menstrual period, as a result of over-heating and "cooling off." There follows languor and loss of strength, attributed often to "malaria." No great attention is paid to it, until unmistakeable symptoms of Bright's disease are noticed and she dies in from a year to a year and a half.

If now, for any reason, a young woman is thought to be predisposed to Bright's disease, her urine should be tested for albumin during the menstrual periods, for this is the time when albumin is most likely to be found. If it be found plainly present and not accounted for by leucorrhœal admixture, and especially if tube-casts from the kidneys are present, then preventive treatment should at once be adopted. The patient should have complete rest during the menstrual periods and on no account allowed social dissipation at this time. She should adopt a diet in which meat plays little or no part, wear woolens and be extremely careful at all times to avoid mental excitement and chilling of the body. Moderate exercise in fresh air during mild weather is allowable.

I have known perfect recovery in one case when the disorder was thus taken in time.

In regard to exercise in the open air bicycling and horseback riding are prohibited, as also tennis, which is altogether too violent. The patient, if well wrapped up, may be driven out during the sunny time of day in the early summer and autumn and may walk short distances, going from house to house, but long walks, dancing, standing on the feet at receptions and the like are prohibited.

Suppose now when a young woman is about to be married that albumin is found in her urine together with casts. Some physicians in such a case advise that she be dissuaded from marrying altogether, but such a course is open to the objection of depressing the nervous system and aggravating the kidney disease indirectly from anxiety and worry, while at the same time it develops a spirit of opposition which usually leads speedily to wedlock. The patient and her future husband should, however, be told that pregnancy may cause her death, for in a woman with already existing Bright's, confinement is likely to be attended by the dreaded "convulsions" of uræmia.

After having seen several deaths from the convulsions of puerperal Bright's I am convinced that not enough attention is paid to the condition of the urine in women about to be married. No woman should become pregnant without knowing what her chances for convulsions are and unless her kidneys are perfectly healthy the danger is certainly great.

Then again the question comes up should a woman who has had convulsions at any one confinement be allowed to become pregnant again? The answer is undoubtedly "no," though it is well known that occasionally women bear children in safety who in previous confinements have had convulsions. This fact is just what makes the trouble. It does not follow that because one woman has escaped convulsions that another one is perfectly safe also. In certain families great desire for children seems to exist and the life of the mother is often risked for the sake of "happiness," so-called. Women should be told, however, that Bright's disease of pregnancy is one of the most insidious and treacherous foes to their life which is known. A trace of albumin in the urine some day, convulsions and death within a week perhaps.

Preventive treatment is summed up in the advice: "Do not become pregnant until the kidneys are entirely healthy, and do not assume that the latter is true until lapse of time has shown it without controversy to be so."

In my experience albumin and casts, rather than deficiency of urea, are the significant signs in the Bright's disease of pregnancy. I have known a woman to be confined without convulsions in whose urine urea was exceedingly deficient a few weeks before child-birth, but albumin and casts were absent.

Then, again, I have known death from convulsions to take place within a week from the time when examination of the urine showed urea normal but albumin in plain traces present.

The question, then, is asked: "How can we tell whether the kidneys are healthy or not?"

In the case of a woman desiring to become pregnant this should be made a matter of no small attention. If repeated examinations of the twenty-four hours' urine show the day urine to be twice to four times the night urine, if albumin and casts are absent at all times of day, while at the same time the normal urinary solids, urea, phosphoric acid, etc., are not deficient, the kidneys are presumably healthy. Unfortunately, however, there are said to be some cases in which women have had convulsions during confinement, but afterwards the urine becomes normal again, lulling the patient into feelings of security, until another pregnancy results in death from uræmia. I am inclined to the opinion, however, that by aid of the modern centrifugal machine casts could always be found, and by the delicate tests of the day albumin also, while the general tendency of the night urine to be more than half the day, would tell the tale of chronic Bright's still lurking in the kidneys.

In the case of young men from 15 to 30 years of age nothing is more common or less significant often than a trace of albumin in the urine. This is frequently found without other symptoms of Bright's disease and so far as I know, without necessary sequence of Bright's. I know half a dozen young men in Chicago who had albumin in their urine five years ago and are as healthy to-day as the majority of us. I see them almost daily, and the only inconvenience from which they suffer is failure to get life insurance. Nevertheless, I advise them all as follows: avoid excesses of all kinds, excessive smoking, drinking, sexual excess, late hours, over-exercise, mental strain. Such men should not drink beer, play foot-ball, take long bicycle rides, nor frequent cold baths. One of these patients was helped by sea baths of ten minutes' duration, at Nantucket; but the water there is comparatively warm and the tonic effect of a "dip" of short duration counterbalanced the slight chill.

Next, we must consider that form of chronic Bright's disease so common during the decline of sexual activity, after forty years have been reached; it is known as chronic interstitial disease, because of its invasion of the interstitial tissue of the kidneys. There is no cure for this malady and sudden death is common, though life may be prolonged five to fifteen years after is well established. It is much more common in men than in women and its development is probably somewhat as follows: A man predisposed by heredity, occupation, or circumstance, having been addicted to excess of some kind for a period of years, or who, although of good habits has led a life of close attention to business, with few vacations and much mental strain, finds himself when 45 or 50 years of age rising at night once or twice to urinate and passing considerable pale urine. Or, if he does not rise at night, yet the urine he voids on rising in the morning is paler than that which he passes during the day, and is more than half as much. There may be no albumin and no casts in the urine. The second sound of the heart in the aortic area is likely to be accented. He may complain of slight loss of strength.

In such a case interstitial Bright's disease is probably beginning. The great preventive is out-of-door life in a suitable climate, continuous residence in Southern California for example. Avoidance of mental strain is imperative. During the late years of financial disaster, I have had ample opportunity to watch the effect of a "bear" market on the kidneys of those heavily long of stocks or grain. I have seen albumin in the urine grow more and more abundant as the value of a man's property grew less and less. One of the greatest financial crashes of the period took place shortly after the death from Bright's of the man at the head of affairs in a certain company, and knowledge of what was surely coming undoubtedly hastened his end.

Worry, as a cause of chronic Bright's disease of the interstitial variety is too well recognized by physicians to be ignored by patients. The explanation given is that anything which tends to lower the tone of the nervous system is a cause of Bright's in those who are predisposed to it.

So then the preventive treatment of chronic interstitial disease consists in fresh air, long vacations, pure water, well digested food without much meat, gradual withdrawal from intensity of business cares, and avoidance of all drain on the nervous system, particularly sexual excess. In the initial stage of interstitial nephritis in men, sexual desire is sometimes increased but over indulgence results disastrously, and it is an error to suppose the feeling to be "a healthy sign."

Lastly, late in life there is danger from pus in the kidneys. This may follow chronic bladder trouble in both sexes. It is rather more frequent in old men who for years have had enlarged prostate. Enlarged prostate means inflammation of the prostate, this in turn leads to inflammation of the bladder, with frequency and more or less pain in urinating. Finally it is necessary to use the catheter in order to draw off the urine from the bladder.

Suddenly, after years, perhaps, of more or less discomfort the patient has a chill, and then another and very violent one, he is weak, goes to bed, his tongue is furred, he becomes delirious, then comatose, and dies. If his urine be examined before death, it will be found to contain much more albumin than usual together with granular casts from the kidneys, or if no casts yet numerous smaller bodies, one-third larger than pus corpuscles, epithelia from the convoluted tubules of the kidneys.

Sometimes the patient dies suddenly from uræmia without any of the premonitory symptoms mentioned above, but I regard these cases as more interstitial than truly suppurative.

Preventive treatment consists in watching the urine, and in knowing when to advise the patient that there is danger ahead. Favorable signs are diminishing quantities of pus and albumin, urea 300 grains a day or more, odor not ammoniacal, reaction not strongly alkaline ; in such cases the trouble is chiefly local in the bladder and prostate. Increase in pus until, the urine settling in a tall jar, it amounts to 5 or 10 per cent. by bulk of the whole urine; increase in albumin until the latter is above the first mark on the Esbach tube; strong odor of ammonia in the urine, strong alkaline reaction, with presence of blood, are unfavorable signs. The patient should at once go to a mild climate, as Florida, and be provided with a solution of boracic acid, to take internally while on the way.

After the violent chills recur and the patient becomes delirious there is no hope.

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THERAPEUTICS OF CHRONIC BRIGHT'S DISEASE.

BY

CLIFFORD MITCHELL, M.D.,

CHICAGO.

PROGRESS in the therapeutics of chronic Bright's disease is certainly slow, yet every year I feel that we make a certain gain. In my experience the problem of defense is to be solved differently, according to the character of the attack. It is convenient to classify the cases as follows:

I. Cases of moderate intensity.
II. Desperate cases.

I. TREATMENT OF CASES OF MODERATE INTENSITY.

In the parenchymatous form such cases show moderate albuminuria (albumin 1 to 3 on the Esbach tube); dropsy is localized; dyspnœa not marked; stomach and heart not seriously affected.

In the interstitial form nervous and gastric symptoms are not severe, though nocturnal urination, chronic neuralgias, seldom severe, and increased tension are observed.

Whether the case of moderate intensity be parenchymatous or interstitial, climate, diet, hygiene, and the single remedy in the lower potencies (seldom tincture) constitute the treatment.

As regards climate, my attention has been called lately to certain advantages of Catalina Island, off the Pacific coast. One patient, whose chief trouble was insomnia, was greatly helped by spending the spring and summer there.

The drugs which, in potency, are to be used in the milder parenchymatous cases are numerous, but among them arsenicum and its iodide, apium virus, ferrum phos., and merc. cor., are too well-known to need comment. In acute intercurrent attacks, cantharides is not to be forgotten.

I have cured, so far as is apparent, several parenchymatous cases of milder intensity with Boudreaux's syrup of the protochloride of iron, or pills of the same preparation. This remedy works well with young people and women. Two cases in men between 20 and 30 years of age have apparently recovered under use of Hensel's Tonicum. One of the latter recently went through an attack of pneumonia, and, although enfeebled by it, shows no return of nephritic symptoms.

Lactate of strontium, as is well-known, will, in many cases, reduce the quantity of albumin. I have noticed that patients set great store by this improvement in quantity of albumin, so that the lactate should not be forgotten. The preparation of Paraf-Javal, is not likely to disturb the stomach.

A very flattering testimonial to the value of strontium lactate was given me recently by the speedy recovery of an elderly man on five-grain doses of the crystals. His symptoms were albuminuria of moderate intensity, weakness, and occasional attacks of vertigo. Various remedies were tried, without diminishing the albumin, but, under the lactate, he recovered speedily, and albumin diminished from 15 per cent. bulk, by the ferrocyanic method, to 2 or 3 per cent.

The cases of milder intensity are sometimes relieved by thorough flushing of the kidneys with various waters.

In the treatment of cases of chronic interstitial nephritis of moderate intensity, aurum muriaticum natronatum has time and again been effectual in my hands in diminishing the nocturnal urination. It should be given at first in the second decimal, and, before abandoning it, in doses of $\frac{1}{50}$ to $\frac{1}{25}$ of a grain of the crude.

Great benefit is obtained when the annoying urination at night is held in check. The patient sleeps better and gains flesh.

For the chronic headache of the milder kind, not so severe as to cause agony, but yet sufficient to make the patient miserable, glonoin, caffeine, and baptisia are the drugs. In my experience, caffeine is, on the whole, the best; but I have not yet had brilliant success with any drugs in the treatment of this obstinate condition. Nevertheless, under the continued administration of caffeine, one of my patients is able to attend to his business, after months of misery and enforced idleness before this drug was tried.

Dr. Charles Gatchell, of Chicago, is an advocate of the use of plumbum in chronic interstitial nephritis. One of his cases in Cook County Hospital made rapid recovery under plumbum aceticum 6x.

Effort should certainly be made to cure with potencies, instead of crude drugs, for in nephritis much depends on keeping the stomach and heart intact, to say nothing of the bowels.

What, now, is to be done with the desperate cases? Here we have only secondarily to deal with the patient, for the patient's family and friends are the primary trouble. We find the latter completely demoralized, turning every which way in anxiety and distress, and likely, in their extremity, to become victims of the hordes of therapeutic pretenders who are besieging their gates and battering down the portals of their common-sense.

II. THE TREATMENT OF DESPERATE CASES OF CHRONIC BRIGHT'S DISEASE.

After an unpleasantly extensive experience with moribund cases, in which I have been called in at the eleventh hour as consultant, I find myself by no means without hope. I am not so afraid of these cases as I used to be, provided I see them before the comatose stage.

The family demand that "something be done," and the "something" is not to be in centesimals. Dropsy must be reduced, the urine increased in quantity, the patient relieved of dyspnœa, and the heart strengthened, or, presto! the host of therapeutic pretenders has possession of the citadel.

Alternation of drugs in material doses is practically a necessity in these desperate cases, and actually saves life. I have no patience with nihilists and pessimists. If you know your pharmacy and your drugs, you can save a life or two now and then, instead of losing all or abandoning them to the Apaches.

What are the drugs which in alternation work well together, and sometimes save life? A summary may be given as follows:

1 When apocynum fails to increase the quantity of urine and to reduce dropsy, alternate it with aralia hispida before

abandoning its use altogether, with an occasional dose of magnesium sulphate to act on the bowels.

This treatment worked wonders in the case of a boy of 12 whom the writer saw as consultant, and in whose urine all the signs of chronic parenchymatous nephritis with fatty degeneration were present. Patient is alive and well to-day.

2 When digitalis is indicated but fails to relieve, give adonis in alternation. This I have from Purdy. Have tried it several times, thus far without success, but always bear it in mind.

3. In uræmic cases, after using jaborandi, follow up with digitalis. This treatment is, of course, not analogous to the preceding, yet it enables us to give the jaborandi with greater freedom. The latter is better given internally in small doses of the tincture every fifteen minutes than any other way.

4. Paraldehyde and caffeine are known to work well together. One of my colleagues has given me full notes of a desperate case, waterlogged and despairing, which he restored to comparatively good health by giving paraldehyde 40 drops at night hourly for three hours, followed next day by citrate of caffeine, 1 grain every four hours. This alternation reduced dropsy, relieved dyspnœa, and increased the urine, so that the patient is alive and able to attend to his business to-day.

5. In purely cardiac dropsies, digitalis sometimes works better when alternated with cactus and caffeine. In a case of this kind in which I was consultant from the renal standpoint, the dropsy was removed by the use of the three above-named remedies.

6. One of the most valuable alternations which I know of is that of elaterium, apocynum, and strychnine. In a case of an elderly man with chronic nephritis with dropsy, and also slight glycosuria, epsom salt irritated the stomach and weakened the patient. Diuretin irritated the stomach, even in the smaller doses. Infusion of apocynum seemed to irritate the bladder. Recourse was had to the following treatment: Elaterium was given in two tablets of one-tenth grain each at first, with a few hours' interval between each, in the morning; later two-tenths in the early morning; apocynum tincture three times daily in doses of 7 drops, after a time reduced to 3 drops; strychnine $\frac{1}{100}$ of a grain night and morning.

The bowels moved freely eight to fifteen times a day under the action of the elaterium, and great relief was experienced from subsidence of the dropsy. I examined the urine from time to time, and at the last examination the twenty-four hours' urine and urea were normal in amount, and but a trace of albumin and a hyaline cast or two left.

The patient is now on arsen. iod. 3x and kali mur., in addition to the other drugs when needed.

7. Diuretin will sometimes remove dropsy, when given in larger doses than the usual 60 or 75 grains daily. If elixir of pepsin be administered after each dose, as high as 120 grains daily may be given without affecting the stomach. This drug, however, occasionally aggravates the albuminuria and cylindruria, and its action should be watched.

8. In cases with cardiac complications, especially valvular, strophanthus is often the drug. It is, however, of but little value in purely nephritic cases. In many cases where strychnine in large doses, $\frac{1}{100}$ to $\frac{1}{30}$ grain, is now used without effect, I am convinced that strophanthus would prolong life.

9. Milk diet is a valuable adjuvant, but is often abandoned because the patient "cannot take milk." In the case of adults, mix Célestins Vichy one-third with the milk. For children, add vanilla extract to flavor and a little sugar. If this disagrees, try lime-water or Vichy, as above.

The only cases now left which really dishearten me are those in which such violent heart-action occurs that on entering the room the physician is at once aware of the pulsations. In one case which I saw, the pounding of the heart shook the bed. Every one of these cases has resulted fatally in from three days to a week. I have seen four in all, two children who died in a short time, and one man who died in a week; one woman (not nephritic) recovered from the cardiac trouble so far as violent action was concerned, but finally died from dilatation of the heart.

Spigelia, cactus, kalmia, digitalis, adonis, and merc. dulcis were tried ineffectually in these rapidly fatal cases. Merc. dulcis and Rubinat water, followed by cactus, caffeine, and digitalis, relieved the violent heart-action in the case of the woman, but as she was not nephritic the case does not really belong to our category. I earnestly invite the attention of the profession to these cases of nephritis, fortunately rare, in which violent heart-action is a feature.

[Reprinted from the HAHNEMANNIAN MONTHLY, May, 1900.]

The Colorless Chromogen of Methylene-Blue in Urine.

BY

CLIFFORD MITCHELL, M.D.,

CHICAGO.

THE dye known as methylene-blue, which commercially is said to be a zinc double chlorid of a sulfur base of dimethylanilin, is now used for diagnostic and therapeutic purposes in diseases of the urinary tract. When taken internally or by hypodermic injection the dye usually colors the urine a blue-green, and the time required for the disappearance of this color, when a dose of one grain has been given, is deemed significant of the ability or inability of the kidney to do its normal excretory work on time. That is, a prompt disappearance of the dye (within thirty-six hours) may probably be taken as an indication that the kidneys are normally ridding the blood of urea, salts, and other urinary constituents, even if the urine contain albumin and casts; while a delay in the disappearance of the color, when prolonged to four days or more and repeated, is to be taken as a sign of latent uræmia, even if definite uræmic symptoms are absent (Herter).

In some cases, however, the dye fails to color the urine at all, being excreted wholly in the form of a colorless chromogen; in other cases the color may disappear, but the excretion of colorless chromogen still continue. It becomes important, therefore, to detect the presence of this chromogen in the cases in which the blue-green color happens to be absent. According to Herter, if the chromogen is present, addition of dilute acetic acid to the urine will then color the latter green. The writer, however, has recently studied a case in which it was necessary to boil the urine after addition of the acetic acid in order to bring out the color prominently, though a faint green coloration could be seen in the cold. In stale urine, boiling may be absolutely necessary to bring out the color after addition of acetic acid. The influence of this colorless chromogen on the various urinary tests has been investigated by the writer as of some importance to the general practitioner. When the urine itself shows the blue-green color, the physician will have little difficulty in determining the presence of the dye. When, however, the color is absent but the chromogen present, curious colors may be obtained in performing the usual tests which may puzzle the inexperienced, especially in the absence of information that methylene-blue is being taken.

The case which the writer has studied is one in which methylene-blue had been taken for therapeutic purposes in cystitis. The day urine of the patient was a faint blue-green, but the night urine a pale yellow with so faint a tinge of green as to escape anything but the closest scrutiny. On mixing the day urine with the night and letting stand in a tightly corked bottle the green color disappeared in a few days, but the chromogen continued to give the green color with acetic acid in the hot urine for a week or more.

The influence of this colorless chromogen on the various tests is shown by the following:

1. Heller's test (cold nitric acid) for albumin: blue-green ring at junction of urine and acid, gradually increasing in size on standing, the blue-green color spreading throughout the upper layer.

2. Nitrous acid by contact as in testing for bile: about the same as above, except that the blue-green color appeared more quickly at the top of the upper layer.

3. Ultzmann's test (heat and acetic acid): on boiling the upper part of the column of urine no change took place till addition of a few drops of dilute acetic acid, when a blue-green tint was observed, becoming much more intense on further boiling.

4. Addition of a few drops, 0.5 c.c. of dilute acetic acid to the cold urine, 5 c.c. in amount; faint blue-green in the fresh urine; no change at all in the stale urine a week old until after standing for half an hour or so, when a faint blue-green was perceptible.

5. Spiegler's test by contact for albumin: no color.

6. Millard's test by contact for albumin: blue-green.

7. Tanret's test by contact for albumin: blue-green at juncture.

As Tanret's and Millard's liquids both contain acetic acid, the coloration was doubtless due to this substance. When the urine was a week old the color could not be seen at first.

8. Almen-Nylander bismuth test for sugar: no reduction, no blackening even on standing over night.

9. Fehling's test for sugar: no change in the hot mixture, but on cooling a muddy green turbidity resulted, as in cases where a trace of some reducing substance is present. In this particular case some accidental impurity in the dye might have been responsible for the reduction.

10. Haines' test for sugar: no discoloration, no reduction even on cooling or after standing over night.

11. Silver nitrate: on addition of silver nitrate to 5 c.c. of the fresh urine the usual curdy-white precipitate was obtained, which almost immediately blackened at the bottom, and finally a dark-brown precipitate settled down with a light blue-green supernatant liquid. This same reduction was also noted in the urine when a week old.

12. Barium chlorid test for sulfates: the usual white precipitate, with a faint blue-green supernatant liquid.

13. Uranium acetate and nitrate, as in determining quantity of phosphates: brilliant blue-green with each, the urine being heated on the water-bath, as in the determination of P_2O_5.

14. Indican test: on addition of equal parts hydrochloric acid to the urine a slight greenish tint was observed, which was almost but not quite overcome by the usual violet color on addition of hypochlorite.

15. Ferric chlorid test: on addition of 0.5 c.c. of a 20 per cent. solution of ferric chlorid, Fe_2Cl_6, to 5 c.c. of the urine in the cold, the usual whitish precipitate was obtained, with an olive-green liquid at the bottom; when the precipitate settled, a green supernatant liquid was observed.

It will be seen from the above that the colorless chromogen of methylene-blue when present in urine complicates several of the ordinary routine tests, notably Fehling's test for sugar and the nitrous acid test by contact for bile. Use of Haines' test-liquid, which is not affected by the chromogen, nor always by accidental impurities of the dye, will serve to distinguish the latter from traces of sugar, and absence of biliary features in the urine differentiate the chromogen from bile. Moreover, the blue-green color which the chromogen yields with nitrous acid is lighter and brighter than the dull grass-green of bile; and the absence of other colors, together with the spreading of the blue-green throughout the upper layer, indicates the presence of the chromogen, when at the same time the urine boiled with acetic acid shows the blue-green tint which biliary urine similarly treated does not show.

The blackening of the silver chlorid precipitate on addition of silver nitrate to the urine is gradual, and should not interfere with observation of the presence of chlorids, while the brilliant blue-green color obtained in the quantitative determination of phosphoric acid does not appear to affect the end reaction with potassium ferrocyanid.

In diabetic cases, where the ferric chlorid test for diacetic acid is made, presence of the chromogen may render the detection of diacetic acid difficult or impossible. In cases, therefore, of diabetic cystitis, the patient, if taking methylene-blue, should be directed to cease taking this substance until the test for diacetic acid has been made.

[Reprint from Medical Current, October, 1895.]

The Action of Certain Therapeutic Agents in the Urine.*

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The object that I have ultimately in view is a study of such therapeutic agents as can influence the *quantitative* composition of the urine.

Let us rest for a while from statistical contemplation and consider the action, if any, of certain popular therapeutic agents with which most readers of the Current are by this time familiar.

PIPERAZINE.

Together with Dr. Pennoyer of Kenosha, I made an investigation with reference to the action of this substance on the *quantitative* composition of the urine, in the case of an elderly man, an invalid from articular rheumatism. The twenty-four hours' urine was examined before the drug was taken, then, on precisely the same diet, the drug was administered in the usual dose for a period of thirteen weeks. The results were as follows:

FIRST ANALYSIS.

(Before taking the drug.)

Urine for 24 hours	20 fluid ounces
Urea	9½ grains per fluid ounce
Urea	185 grains per 24 hours
Phosphoric acid	1 grain per fluid ounce
Phosphoric acid	19 grains per 24 hours
Uric acid	0.15 grains per fluid ounce
Uric acid	3 grains per 24 hours
Total solids (computed)	393 grains

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*Written especially for the Medical Current.

SEVEN ANALYSES COVERING A PERIOD OF THIRTEEN WEEKS.

Urine per 24 hours.	1	2	3	4	5	6	7
	60 oz	53	30	22	37	50	36
Urea per oz, grs..	3¾	4	6	9½	5½	4	5
Urea, total grains.	225	200	185	210	205	195	175
Phos. acid per oz, grains........	0.5	0 5	0.6	0.8	0.5	0.5	0.5
Phos. acid total, grains........	27	25	20	20	19	25	18
Uric acid per oz, grains........	.02	0.1	0.1	0.1	0.15	0.155	0.15
Uric acid total, grains........	1¼	5	3	2½	5	7½	5
Total solids, grs..	......	490	349	357	340	455	......

The urea averaged about 200 grains in twenty-four hours. Phosphoric acid averaged 15½ grains, and uric acid 4 grains. Total solids averaged about 380 grains in twenty-four hours.

In other words the *quantitative* composition of the urine during the three months when the drug was taken remained practically the same as it was before the drug was taken. The absence of fluctuations would have been remarkable even had no drug been taken at all.

The processes used for determinations were hypobromite for urea, uranium nitrate for phosphoric acid, precipitation with hydrochloric acid and weighing for uric acid.

The next experiments tried were on

KOLA.

In this case I chose myself as the subject, and the results of my analyses have already been published.* Nevertheless a summary of them may not be without interest here. I collected my own urine for ten consecutive days before taking the drug. The averages were as follows: Urine fifty-four ounces, specific gravity 1,019; urea per twenty-four hours, 515 grains; phosphoric acid do: 34 grains, uric acid do., 19 grains; average ratio urea to phos. acid, 15 to 1; average ratio urea to uric acid, 24 to 1.

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* The New Idea, July–August, 1895.

These were large figures for a person weighing but 135 pounds. I then took the maximum dose of fluid kola four times daily for seven days collecting my urine for the last six out of the seven.

The averages while on kola were as follows: Urine, fifty-six ounces; specific gravity, 1,019; urea per twenty-four hours, 515 grains; phosphoric acid do., 32 grains; uric acid do., 14 grains; average ratio urea to phosphoric acid, 16 to 1. Average ratio urea to uric acid, 36 to 1.

In other words there was remarkable similarity in results obtained before and after taking the drug, save in the case of uric acid. Whether the differences in the excretion of uric acid were due to the kola or to unavoidable error in the determinations of uric acid I cannot say. It might be worth while to study the action of kola with reference to the excretion of uric acid. That kola is a diuretic, when taken for seven days in the maximum dose, by a person in health, was not true in my case.

The next experiment was made with a substance known as

PHOSPHO-ALBUMEN.

This is one of the most palatable preparations I ever tasted, and, if the agent had left me ten bottles of it instead of two, I would have taken all ten with gusto!

As it was I took 300 c. c. of it, or 10 fluid ounces, between 3 P. M. one day and 9 A. M. the next. The total amount of urine during that twenty-four hours was 54 ounces, the specific gravity 1,018, the total urea 415 grains, the total phosphoric acid 33 grains, the total uric acid 12½ grains; ratio of urea to phosphoric acid, 12 to 1; ratio of urea to uric acid, 31 to 1. In other words the phosphoric acid was not sensibly increased. Urea and uric acid were sensibly decreased, due to perspiration, doubtless, as the weather was very warm.

The last therapeutic agent examined has been

LONDONDERRY LITHIA WATER.

Whatever may be the revelations of the test-tube in regard to lithia and lithia waters, I have used them clinically with seeming success. Hence when the agent left me a large number of pints and quarts of the charged water I resolved to test it on myself. I began by drinking 27 fluid ounces at 5:30 one afternoon on an empty bladder. At 6:30 11 ounces of feebly acid urine were voided. At 10:15 I drank 12 ounces more of the charged water and very soon afterwards voided 9 ounces, nearly, of urine. The next morning 15 ounces of urine were voided on rising. At 11:30 A. M. 5 ounces of urine were voided and just after that I drank 9 ounces of the charged water. Between 11:30 and 12:30 I managed to drink no less than 52 ounces of the charged water. After that the urine voided was decidedly alkaline and between 12:30 and 3 P. M. 61 ounces of urine were voided.

In other words 100 ounces of the charged Londonderry lithia were drunk during the twenty-four hours and during that time 101 ounces of urine were voided. The specific gravity was 1,011, the total urea 525 grains, the total phosphoric acid 36½ grains. The uric acid determination was unfortunately not made owing to interruption.

There is then no question about the alkaline character of Londonderry lithia water nor in regard to its prompt diuretic effect, at least so far as my own case is concerned.

70 STATE ST.

[Reprint from MEDICAL CURRENT, Sept., 1895.]

Elimination of Phosphoric Acid in Bright's Disease.

CLIFFORD MITCHELL, A. M., M. D.

Having studied the elimination of phosphoric acid in fifty-three fatal cases in which albuminuria was noticed along with presence of granular, fatty, and waxy casts, easily found without use of centrifuge, next let us consider the elimination in cases which have thus far not terminated fatally.

II.—PHOSPHORIC ACID ELIMINATION IN ALBUMINURIA WITH GRANULAR, FATTY, OR WAXY CASTS. SIXTY-SEVEN CASES STILL LIVING.

From January 1, 1888, to January 1, 1895, I have made eighty-five analyses of phosphoric acid in the urine of sixty-seven such patients who are still alive, and some said to be well, of which forty-six are males, nineteen females, and two are unknown as to sex; fifty-eight are adults, eight are children, one is unknown as to age.

PERCENTAGE OF PHOSPHORIC ACID.

In the cases in whose urine I found albumin, together with granular, fatty, or waxy casts, and who are alive January 1, 1895, the percentage of phosphoric acid was as follows: More than 3 grammes per liter (1.43 grains per ounce), above 0.3 per cent, paying no attention to the specific gravity of the urine, was found seven times, viz: 4 gm. per liter, 3.75, 3.4, 3.32, 3.3, 3.22, 3.04. The patients were five men and two children, the sex of one of the latter not being known to me.

Between 2.5 gm. per liter and 3, including both figures, that is from 1.17 grains per ounce to 1.43 grains per ounce inclusive, 0.25 to 0.3 per cent inclusive, occurred only two times in the urine of one woman and one man, viz: 2.8 gm. per liter, 2.7.

From 2 grammes per liter up to but not including 2.5 grammes per liter, that is from about 1 grain per ounce up to but not including 1.17 grain per ounce, 0.2 per cent to 0.25 per cent, not including the latter, occurred twelve times in the urine of eleven patients, ten men and one woman, as follows: 2.46, gm. per liter, 2.4, 2.2, 2.15, 2.12, 2.07, 2.07, 2, 2, 2, 2. From 1.5 grammes per liter up to but not including 2 grammes per liter, that is from 0.7 grains per fluid ounce up to but not including about 1 grain to the ounce, from 0.15 per cent up to but not including 0.2 per cent, occurred nineteen times in the urine of sixteen adults, two children and one person of unknown age; eleven men, five women, two boys, one unknown as to sex. 1.9 gramme up to 2 gm. per liter was found four times, 1.8 gm. per liter four times, 1.7 up to 1.8 gm. per liter five times, 1.65 gm per liter twice, 1.5 gm. per liter four times. From 1 gramme per liter up to but not including 1.5 grammes per liter, that is from 0.469 grain per fluid-ounce up to but not including 0.7 grain per ounce, from 0.1 per cent up to 0.15 per cent, occurred twenty-nine times in the urine of twenty-two patients, twenty-one adults and one child; fifteen men, five women, one female child, and one of unknown sex. Going into particulars we find 1.4 gm. per liter twice in the urine of one man, and three times more in that of three other men; 1.3 gm. per liter occurred twice in the urine of the same man as above and four times in the urine of four others, one a woman, the other three men; 1.2 gm. per liter was found again in the urine of the same man as above and once in the case of another person unknown as to sex. 1.1 gm. per liter occurred twice in the urine of the man mentioned above, and in that of seven others, two women and five men; 1 gm. per liter occurred four times in the urine of three men and one woman.

From 0.5 gramme per liter up to, but not including, 1 gm. per liter (0.23 grain per fl. oz. up to, but not including, 0.47 grain per fl. oz.), 0.05 per cent up to but not including 0.1 per cent, occurred ten times in the case of eight adults and two children. in the case of four men, four women, and two boys, the elder fifteen years of age.

SUMMARY.—Seven patients voided more than 0.3 per cent; two patients voided 0.25 per cent to 3 per cent; eleven patients voided from 0.2 per cent to 0.25 per cent; nineteen voided 0.15 per cent to 0.2 per cent; twenty-two voided from 0.1 per cent to 0.15 per cent; ten voided from 0.05 per cent to 0.1 per cent.* In other words half the patients voided from 0.1 per cent to 0.2 per cent,† 1 gramme to 2 grammes per liter, half a grain to a grain per fluid ounce. Twenty patients voided more than this and ten less than this. Only nine patients voided more than 0.25 per cent. The great majority then voided less than 0.25 per cent, and by far more were found to void between 0.1 per cent to 0.2 per cent than in any other range. The largest percentage found was 0.4, the smallest 0.04.

TOTAL QUANTITY OF PHOSPHORIC ACID IN TWENTY-FOUR HOURS.

The next thing to do is to go over the records for total phosphoric acid in the cases living and compare the figures with those found in case of patients who are dead. The total phosphoric acid in the cases still living was estimated sixty-three times in the urine of fifty-one persons. Two patients voided 4 to 6 grammes in twenty-four hours, namely 4.67 and 5.94 grammes respectively, 72 and 90 grains, both patients men. Two patients voided 3 to 4 grammes, namely 3.08 and 3.9 gm. respectively, 48 and 60 grains, the first a woman the second a man. In five analyses 2.5 gm. to 3 gm. were found namely 2.5 gm., 2.73, 2.8, 2.9, 2.95; 38 grains, 42 grains, 43 grains, 45 grains, and 46 grains respectively; the patients all men, five in number. In fifteen analyses 2 gm. to 2.5 gm. were found as follows: 2 gm., 2, 2, 2.1, 2.12, 2.16, 2.22, 2.2, 2.25, 2.26, 2.33, 2.35, 2.40, 2.42, 2.46, that is to say about 32 grains, 32, 32, 33, 33, 33½, 34, 34, 35¾, 35¾, 36¼, 36¼, 37¼, 37¼, 38. The patients in this set were eleven men and one woman.

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* The total number is here seventy-one patients, since four belonged to different ranges according to analyses made at different times.

† Paying no attention to specific gravity.

In fourteen analyses 1.5 gm. to 2 gm. were found namely, 1.5 gm., 1.53, 1.6, 1.63, 1.65, 1.65, 1.67, 1.72, 1.75, 1.76, 1.77, 1.78, 1.8, 1.96; that is to say about 23 grains, 24¾, 25, 25¾, 25¾, 25¾, 26½, 27, 27, 27½, 27½, 28, 30. The patients in this set were six men, five women, one child.

In twenty analyses 1 gm. to 1.5 was found namely, 1 gm., 1.1, 1.2, 1.2, 1.2, 1.2, 1.23, 1.24, 1.25, 1.27, 1.28, 1.29, 1.3, 1.32, 1.35, 1.38, 1.4, 1.4, 1.4, 1.43; that is to say about 15½ grains, 16, 18½, 18½, 18½, 18½. 19, 19, 19½, 19¾, 19¾, 20, 20, 21, 21½, 22, 22, 22, 22¼. The patients in this set were nine men, five women, and two boys.

In five analyses 0.5 gm. to 1 gm. was found namely, 0.5, 0.8, 0.86, 0.9, 0.97 gm.; that is to say 8 grains, 12, 13, 14, 15. In one analysis less than 0.5 gm. was found namely, 0.3 gm. or 4¾ grains. In these last cases the patients were three men, one woman, one boy. The least quantity of all was voided by an adult man of full weight and at the time of most serious illness.

SUMMARY: The majority of patients voided 1 to 2 gm. in twenty-four hours or 15 to 30 grains; seventeen voided more and five less. The greatest quantity voided was 5.94 gm. (90 grains) and the least 0.3 gm. (about 5 grains). The average excretion was 1.8 gm., 28 grains.

The comparison between the excretion of phosphoric acid by those who died and by those who lived may be made as follows: (See CURRENT for Aug. 1895.)

	THE DEAD.	THE LIVING.
Above 2 gm.	13 per cent of the patients	24 per cent.
Above 1.5 gm.	34 “ “ “	57 “
Above 1.0 gm.	71 “ “ “	88 “
Below 1.0 gm.	31 “ “ “	10 “
Greatest quantity per 24 hours	2.2 gm.	5.94 gm.
Average excretion	1.14 gm.	1 8 gm.

In other words the percentage of those who passed more than 1 gm. (15 grains) in twenty-four hours of both the living and the dead is not so very unlike, namely, 71 per cent of the dead and 88 per cent of the living, the excretion being nevertheless in favor of the living; but when it comes to a question of voiding from 1.5 gm. up, the percentage is greatly in favor of the living. *Twice as many people live as die of those having albuminuria with granular, or fatty, or waxy casts when at the same time they void more than 1.5 gm. (23 grains) of phosphoric acid in twenty-four hours. On the other hand, now, three times as many people die as live when in addition to albuminuria with granular, or fatty, or waxy casts they void less than 1 gm. (15 grains) of phosphoric acid in twenty-four hours.*

Those who live void on an average 1.8 gm. (28 grains) of phosphoric acid, whilst those who die void but 1.14 gm. or about 18 grains.

It would appear from the above that, when albumin together with granular, fatty, or waxy casts is found in the urine of a patient, estimation of phosphoric acid is of value as a factor in the prognosis.

70 State st.

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The Urine of Children—With Cases of Diabetes and Nephritis from Practice.

BY

CLIFFORD MITCHELL, M.D.,

CHICAGO, ILL.

THE writer, having examined the 24 hours' urine of a female child 2 years of age, weighing 30 pounds, in perfect health, obtained the following results:

Volume of urine per 24 hours,	30 fl. ozs.
Specific gravity,	1013
Urea, total,	270 grains.
Phosphoric acid, total,	16 grains.
Uric acid, total,	6 grains.
Ratio of urea to phosphoric acid,	16 to 1.
" " uric acid,	45 to 1.

From this it will be seen that in spite of the dogmatic assertion that children pass 4½ grains urea per pound when weighing 40 to 80 pounds, one weighing only 30 pounds passed 9 grains of urea per pound.

The writer, having examined the urine of numerous children, has become skeptical in regard to the relation of urea and uric acid to either age or weight. Not long after examining the urine of the child mentioned above, the urine of a man of 35 years, weighing 140 pounds, was analyzed, and found to contain in 24 hours only 280 grains of urea and 6¾ grains of uric acid, or practically about the same as that of the 2-year-old child.

Any one who makes a sufficient number of determinations of urea and uric acid cannot fail to observe that in this region adults pass less and children more than the older books would think normal. Female children from 5 to 15 years void from 130 to 300 grains of urea, in the writer's opinion according to diet and digestion. Boys 10 or 12 years of age void a little more than this on an average.

Diabetes in children increases the excretion of urea; from 400 to 700 grains were passed by two diabetic children of 12, whom the writer saw. Epilepsy tends to increase urea; 4 epileptic children from 8 to 12 years of age voided from 200 to 400 grains.

It will be noticed in the first analysis, that of the healthy girl of 2, that the ratio of urea to phosphoric acid was high, 16 to 1, instead of the usual normal 10 to 1 or 12 to 1; or, in other words, the amount of phosphoric acid was relatively much less than that of urea or uric acid. The writer has noticed that boys of 10 years or less may not void more than 10 or 12 grains of phosphoric acid, and that children in general pass much less of this substance than adults. For example, the same adult whose urea and uric acid was about the same as that of the child of 2 voided 26 grains of phosphoric acid, while the child voided only 16. The average amount of phosphoric acid for adults is said by the older authorities to be 45 grains; but the writer, who has made over 3000 determinations of phosphoric acid in the 24 hours' urine, thinks this figure much too high. For a healthy adult, weighing 145 pounds, the writer regards 35 grains of phosphoric acid as full normal. Class after class of students at the Chicago Homœopathic Medical College, whose urine has been systematically examined, has fallen below this average rather than gone above it. In the writer's experience, children seldom void over 20 grains unless they are epileptics or diabetics, in which cases as high as 40 grains may be voided.

In contrasting, then, the urine of a healthy child with that of an adult of 145 pounds, the writer lays more stress on the elimination of phosphoric acid than of urea or uric acid. In other words, in children the ratio of urea to phosphoric acid must be watched, and a low ratio, below 10 to 1, should certainly be regarded as relatively a sign of waste of phosphoric acid. It will be interesting to observe the action of remedies on this ratio. We all know how much good calcarea phos. does certain children, and we should determine whether this action is most marked in cases of a high or a low ratio. The writer suggests that internes in charge of institutions where children are kept should study the action of homœopathic remedies with reference to this ratio; it is the most tangible thing we have at our command, and about the only one the writer knows of in which the urine of children differs in marked degree from that of adults from the standpoint of quantitative analysis of normal constituents.

Passing on to the consideration of abnormal constituents, the writer believes that plain traces of albumin are relatively more common in the urine of children than in that of adults. So-called "delicate" children are not uncommonly subject to slight but persistent albuminuria. The writer has not seen, as yet, any nephritic results from such cases. The quantity is usually less than 1 per cent. bulk by the ferrocyanic method and centrifugal sedimentation. Casts are sometimes present, but only a few small hyaline ones, without epithelia or granular *débris* on them.

Sugar is rare in the urine of children, and, when present, invariably (in the writer's experience) means diabetes mellitus. Also there is invariably present the red reaction in the urine with ferric chlorid solution. Add to an inch of urine in a test-tube 3 drops of a 20 per cent. ferric chlorid solution, and if the bottom part of the urine is red (instead of the normal yellow), diacetic acid is present. Every child and every person under 25 with diabetes, whom the writer has examined, has shown this red reaction with ferric chlorid, in this respect differing notably from diabetic adults, in whose cases the red reaction is rare in the absence of drugs from the urine. Certain drugs, as salicylates, give the same reaction and must be excluded.

The coincidence between fatality and this red reaction is shown by the writer in an article which has already appeared in the HAHNEMANNIAN.

The writer has seen a number of cases of children with diabetes mellitus; the urine then contains as much phosphoric acid as that of a well-nourished adult. Sugar in the urine of children is not notably affected by diabetic diet. A certain amount of benefit may be derived in the start from diabetic diet, which must, however, include green vegetables to be beneficial. The writer has at present under his care a boy of 18 who had been passing 160 fluidounces of urine of specific gravity as high as 1040. Under arsenicum and diabetic diet, which included green vegetables, the urine is now about 75 to

80 fluidounces, and of specific gravity around 1030. In six weeks he has gained 3 or 4 pounds, and is considerably stronger. The red reaction, however, is still found with ferric chlorid, and the writer's prognosis is unfavorable. In an adult it is no uncommon thing to see sugar diminish from 7 to less than 1 per cent. in from one to three weeks under proper treatment; but in these cases the red reaction is absent.

Lastly, with reference to sediments in the urine of children, the writer sees more urates and uric acid than anything else. The presence of uric acid in the sediment is not always a sign of excess of uric acid in solution, but a sediment of urates frequently is. This the writer has verified by careful quantitative analysis. Digestive disturbances, the writer thinks, are often at the bottom of these sediments. Nux and calcarea carb. are frequently all that are necessary. When uric acid is deposited, we generally have a hyper-acid condition of the urine, which, in the absence of an indican reaction, may be remedied by lithium carb. But if there is much indican present, mercurius or bryonia may be needed in addition.

During the scarlet fever epidemic of last winter a number of cases of acute post-scarlatinal nephritis were seen by the writer. All recovered except one. It was noteworthy that in the case terminating fatally the tube-casts, at the time when the writer was called in consultation, were mostly fatty, granular and waxy, especially waxy. The writer does not recall ever having seen waxy casts larger or more numerous in the urine, but, nevertheless, ætiology of previous lardaceous disease was wanting. Intra-venous injection of normal salt-solution was faithfully tried in this case, but without effect. Convulsions were a persistent feature, and finally caused death.

The cases which recovered were in some instances critically ill, with urine down to a few ounces per 24 hours, but without convulsions, and without waxy or numerous dark granular casts in the urine.

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The Ferric Chlorid Reaction in 27 Cases of Diabetes Mellitus.

BY

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CHICAGO, ILL.

(A Clinical Lecture delivered at the Chicago Homœopathic Medical College in the course on Renal Diseases.)

THAT the clinical value of the ferric chlorid reaction in the urine of diabetes mellitus should not be more generally appreciated is not surprising, when we consider the small number of cases of this disease which fall to the lot of any one general practitioner. It is necessary to follow the course of a number of cases with close observation of the relation of the condition of the urine to that of the patient, in order to wake up to the clinical importance of the above-named reaction. Before entering into the subject from a clinical standpoint, a few words are necessary in regard to the proper performance of the test, a matter which is all-important.

Technique of the Test.—It has long been known that in the urine of diabetic coma, and of the condition preceding it, there is present a substance which gives a Bordeaux-red color with solution of ferric chlorid. This substance has been called diacetic acid, or by some ethyldiacetic acid.

The standard method of testing for it is given at some length in my recent work on the urine (*Era Pub. Co.*, Chicago), on page 233.

For clinical purposes I use a shorter method of my own, as follows: Take two test-tubes of about the same size, and into one pour 4 or 5 c.c. (about one fluidrachm) of the diabetic urine, and into the other the same amount of normal urine. Make up a solution of ferric chlorid, Fe_2Cl_6, in distilled water. After experimenting on various strengths I have chosen a 20 per cent. solution as, on the whole, most satisfactory for clinical purposes. Using a medicine-dropper with rubber nipple, add three or four drops, but not more, of the 20 per cent. ferric chlorid solution to each of the samples of urine previously measured out into the two test-tubes. (If a graduate is not at hand for measuring purposes, about an inch of urine in each tube will be a proper amount.)

The ferric chlorid solution should be dropped into the urine slowly, drop by drop, and fairly and squarely, so that each drop hits the urine and not the side of the tube. As the drops sink to the bottom they make a cloudy trail, due to precipitation of the phosphates. After the third or fourth drop has been added the upper and greater part of the urine becomes cloudy, but the bottom part is clear. Now, in normal urine this clear bottom part is of a golden-yellow color, but in urine containing diacetic acid the color is a more or less dark-red.

When it is known with certainty that the patient is not taking drugs, the test as above described is sufficient. In these days of analgesic remedies, however, it is not always safe to assume that the patient has not had a finger in the pie of his own treatment. The numerous aches and pains of diabetics are conducive to resort to the various analgesics, and it is precisely these substances which may make the test uncertain.

When, therefore, we are not absolutely certain that the patient is not taking drugs at the time the urine is examined, further procedure is necessary as follows: Four or five c.c. (about one fluidrachm, or about one inch of urine in a test-tube of medium size) are measured out and boiled over a spirit-lamp. The ferric chlorid is added precisely as before while the urine is hot, and the mixture immediately filtered. In case the red reaction noticed in the first test was due to diacetic acid and not to drugs, the urine now comes through the filter golden-yellow instead of red, and remains yellow, even after further addition to it of a drop or two more of the ferric chlorid.

If on the other hand the red reaction was due to the presence of drugs in the urine, the filtered urine is reddish or will become red after further addition of a drop or two more of the ferric chlorid.

I have made a sufficient number of experiments on the urine of diabetic patients to satisfy myself that the red color due to presence of drugs, as salicylates, in the urine will appear when ferric chlorid is added to the hot urine, but will not appear in the hot urine when the color in the cold was due to diacetic acid. The results of the test may be shown concisely in the following:

A. An inch of cold urine in a test-tube to which are added three or four drops of a 20 per cent. solution of ferric chlorid: (1) If the lower and clearer portion is a golden-yellow color the test is negative. (2) If the lower and clearer portion is reddish or dark-red, either (a) diacetic acid is present or (b) some drug which gives a red color with ferric chlorid, or else other fatty acids, are present.

B. In case the red color appears at the lower part, take another sample of the urine, boil an inch of it in a test-tube, add three or four drops of the ferric chlorid solution, and filter hot: (1) If the urine goes through the filter golden-yellow, and does not turn red when a drop or two more of the ferric chlorid is added to it, *diacetic acid is probably present.* (Further tests may be made as directed on page 233 of my recent work on the urine). (2) If the urine goes through the filter reddish or yellowish-red, or if the latter becomes more red when a drop or two of ferric chlorid are added to it, diacetic acid is absent, and the original red color in the cold urine was due to drugs or other substances. It is, of course, possible that a patient with diacetic acid in his urine might be taking salicylates or other drugs, in which case the conclusion that diacetic acid was absent would be erroneous. When, therefore, the red color persisting in the hot urine is obtained, administration of drugs should cease until the absence of diacetic acid be assured. In other words, two points are essential to be made in the detection of diacetic acid:

I. A red color when cold urine is treated with ferric chlorid solution.

II. Absence of this red color when hot urine is similarly treated.

Substances Interfering with the Test.—As shown above, various drugs passing out through the body in the urine may strike a red color with ferric chlorid, but the red will also appear when the urine is heated beforehand. It is well to consider what these substances are which may be misleading to the inexperienced, as stated in my book on the urine, p. 234; thallin, antipyrin, salicylic acid and phenol (carbolic acid) give the red reaction, as also fatty acids and other compounds.

Dr. Alfred Lewy, of Chicago, has recently studied the action of various drugs which are likely to give the red reaction with ferric chlorid. He tested in my private laboratory some fifty samples of various medicinal agents, to see which ones gave shades of red with ferric chlorid and which did not. His results were as follows: Warner's Elixir Salicylic Compound, Glyco-Thymoline, Sanitas Oil, Tincture of Iodine, Warner's Antiseptic Pastilles, Pancrobilin, Chloralamid, Zymocide, Wyeth's Elixir Salicylate of Strontium Compound, Tongaline, Liquid Peptonoids and Week's Saw Palmetto Compound gave color with ferric chlorid in which red in some shade was present. Of these, Sanitas Oil and Warner's Antiseptic Pastilles in solution gave an orange color not likely to be mistaken for the wine-red proper to the reaction; equal parts of Glyco-Thymoline and water gave a pinkish-red, turning brick-red. Pancrobilin (one pill in 5 c.c. water) gave an orange color with the ferric chlorid; tincture of iodine gave an orange precipitate; Chloralamid (1 part by volume of Schering's Elixir to five parts water) gave a close imitation of the Bordeaux-red; Zymocide and water, equal parts, gave with ferric chlorid several colors ending in dark violet; Warner's Elixir of Salicylate of Strontium gave a rich violet which, when diluted, became a rich wine-red; Tongaline about the same. Arlington's Liquid Peptonoids, equal parts with water, gave a red-yellow color when the ferric chlorid was added, but the shade was not a wine-red; Week's Saw Palmetto Compound gave a dark-red by direct light, which, however, was muddy by reflected light.

Of all these, therefore, only Chloralamid and the Salicylate preparations gave reactions which closely resemble the red reaction with diacetic acid.

When, then, the patient is taking Chloralamid or Salicylates, any red color given by the urine when ferric chlorid is added to it should be looked upon as due to presence of the drugs, administration of which should be suspended and the urine tested again.

In confirmation of the above, let me say that I found in the urine of a patient taking Warner's Elixir Salicylic Compound a red reaction with ferric chlorid, persisting in the hot urine. The patient, a diabetic, ceased taking the preparation for a few days, when the red reaction was no longer found in the cold urine, indicating absence of diacetic acid originally.

In conclusion, let me say that the test should always be tried on freshly voided urine.

Clinical Significance.—It has been my experience that but little amelioration is to be hoped for or expected in cases in which the red reaction, present in the cold urine and absent from the hot, occurs.

It may seem rash to stake a prognosis on a single urinary reaction; in fact, I have repeatedly in these lectures protested against jumping at conclusions from insufficient urinary data, but in the case of the red reaction it would appear that we are justified in taking a gloomy view of the case, if it, the reaction, is due to diacetic acid. In my own experience of nearly two hundred cases of diabetes I have no evidence of any noteworthy amelioration ever having been brought about, either by anybody else or by myself, after the diacetic acid persistently appeared in the urine.

On the other hand, when diacetic acid is absent, diabetes mellitus is in my experience the easiest disease to manage in the whole urinary category. The quantity of sugar, no matter how large, can be brought down to 1 per cent. or less, and the patient told "to take up his bed and walk."

Under the influence of appropriate diet and treatment I have repeatedly seen the sugar fall below 1 per cent. in less than a fortnight, and in two instances permanent disappearance of the sugar took place, which has not as yet returned, even in traces. The following list of 27 cases (see table, page 6) will serve to show the course of the disease when diacetic acid is present, and when it is absent.

Case No. 1 has been under my observation for eight years, with repeated examination of urine. At no time has diacetic acid ever been found. He is apparently better now than at any time since the sugar appeared.

Case No. 9 showed no diacetic acid although critically ill, having had gastric crises and being very weak at the time I saw him. I suspected that the absence of diacetic acid was but temporary and made repeated examinations. I found it three days later in his urine, and from that time on it was never absent during the remaining six weeks of his life.

Cases 10, 13, 21 and 26 were all young people under 20 years of age. In my recollection, diacetic acid has never been

Cases.	First Seen.	Ferric Chlorid Reaction.	Present Condition of Patient.
1. Mr. M...	1891.	Absent. None now.	Alive and attending to business.
2. Mrs. G..	Feb., 1895.	Absent. Not found at last examination.	Alive. In fairly good health.
3. Mr. P...	" "	Absent.	No sugar present. Patient well and attending to business.
4. Mr. K...	April, 1895.	Absent.	Amelioration prompt, but present condition unknown.
5. Mrs. S...	Dec., 1895.	Absent, and not found at any time since.	Alive, and in fairly good health.
6. Mr. B...	May, 1896.	Absent.	No record.
7. Mr. C....	June, 1896.	Absent.	Rapid amelioration. Relapse when treatment discontinued. Now better again after resuming treatment.
8. Mr. M...	Sept., 1896.	Absent.	Rapid amelioration. Sugar easily controlled.
9. Mr. R..	Dec. 23, '96.	Absent.	Patient suffering from gastric crises.
Mr. R..	Dec. 26, '96.	Present.	Died in six weeks.
10. Boy 19 yrs. old.	April, 1897.	Present.	Died in June, 1897.
11. Mr. G...	April, 1897.	Absent.	Rapid amelioration. Discontinued treatment, and was said to be dying early in 1899.
12. Mrs. T...	May, 1897.	Present.	No record.
13. O. R., girl of 8.	Aug., 1897.	Present.	Died in one year.
14. Mrs. R..	April, 1895.	Present.	Died in 1899.
15. Mr. H...	Jan., 1898.	Absent.	Alive.
16. Mr. B...	March, 1898.	Absent.	Rapid amelioration. Sugar reported to be absent.
17. Mrs. M..	1897.	Absent.	Case stationary until writer's mineral-water treatment taken, when rapid amelioration.
18. Mrs. Mc.	April, 1898.	Slight reaction present.	Died, June, 1898.
19. Mr. Mc.		Absent.	Alive.
20. Mr. L...	Sept., 1898.	Absent.	Alive. Rapid amelioration. Sugar absent in less than a week.
21. Boy 19 yrs. old..	Oct., 1898.	Present.	Died, March, 1899.
22. Mrs. W.	Nov., 1898.	Present.	Died of exhaustion, June, 1899.
23. Mr. E...	Jan. 19, '99.	Absent.	Rapid amelioration. Sugar decreased from 4 per cent. to less than 1 per cent. in a month.
24. Mr. B...	Dec. 30, '99.	Absent.	Rapid amelioration. Sugar decreased from 5 per cent. to less than 1 per cent. in about a month.
25. Mr. M...	June 1, 1899.	Absent.	Remarkable amelioration. Sugar decreased from 7 per cent. to ⅔ of 1 per cent. in 5 days.
26. Boy of 18.........	Aug. 5, '99.	Present.	Case obstinate. After a month's treatment sugar still 6 per cent.
27. Mr. M...	Aug. 25, '99.	Absent.	Sugar reduced from 6 per cent. to less than 1 per cent. in a fortnight.

absent from the urine of such young people as I have seen affected with diabetes mellitus. Nor have I seen any of them recover.

In case 26, now living, a slight gain was made; the patient, a boy of 18, gained three pounds in ten days under diet and treatment, felt stronger, and had less trouble from cramps in the legs; but when I saw him last he was passing more than 100 fluidounces of urine, and the sugar was 6 per cent. In Case 11 there was no diacetic acid ever to be found in repeated examinations of the urine. Patient was an old man so tormented by thirst that he sat in a chair in the kitchen, so as to be near the hydrant. In three days or less the thirst was reduced to only a little more than normal. He discontinued diet and treatment, and when last heard from (1899) was said to be dying.

Case No. 27 was a man who had been unable to visit his office in several months. Diet and treatment began on Thursday, and on Monday he was at his desk, where he has been ever since, now three months.

Case No. 3 is apparently cured. Sugar gradually disappeared entirely from the urine, and has not as yet returned.

Case No. 22 was that of a woman in whose urine diacetic acid was found several times. She would not adhere to any systematic *régime*, but drifted about from one thing to another, and died suddenly, in about seven months, apparently of exhaustion. In Case 18 the diacetic reaction was only slight, due perhaps to the fact that no freshly voided sample of urine could be obtained. The writer has no doubt from the record of this case that diacetic acid could have been found by repeated examinations of freshly voided urine.

From the above list the following conclusions may be drawn:

1. When the ferric chlorid reaction is absent, the amount of sugar in the urine is of little consequence. It may be reduced from as high as 7 per cent. to less than one in five days under appropriate treatment.

2. When the ferric chlorid reaction due to diacetic acid is continually present, little or no benefit is experienced from the same line of treatment which so speedily helps those in whose urine the reaction is absent. Diet, drugs and mineral waters all fail to help the patient; suggestion, mental therapeutics,

“faith,” etc., were tried by at least one patient in the list, but without avail.

[I notice with interest the researches of De Renzi (*Gazz. degli Osp. e. delle Clin.*, June 5, 1898), who claims that on a diet of green vegetables exclusively, for a day or so, both sugar and acetone vanish from the urine. In the severest cases he restricts the diet to green vegetables alone for two days, then allows a mixed diet of 100 grammes green vegetables, 300 grammes meat, five eggs, and half a pint of red wine daily. Twice a year the patient should restrict himself almost exclusively to green vegetables for a few days.]

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THERAPEUTICS
OF
DIABETES MELLITUS.

BY CLIFFORD MITCHELL, M.D.,
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II.

I HAVE had so many letters from physicians in regard to my article in the January number of the HAHNEMANNIAN, that I feel interested in giving all particulars possible.

In regard to the first patient treated with the mineral water, full data are at hand, as he was himself a physician, and was attended by a colleague of mine, while, as consultant, I examined the urine frequently, and saw the patient often. The history of the case is stranger than fiction, and not less dramatic in many ways.

Patient was male; physician. July, 1889, when 41 years of age, weighing 240 pounds, noticed that he was voiding a great deal of urine. By December, 1889, he was conscious of greater thirst than usual: Tests for sugar in the urine were negative, so he paid no attention to the matter. February, 1892, he applied for life insurance, and was rejected on the score of diabetes mellitus. Quantity of urine was then about six pints in 24 hours. There were no troublesome subjective symptoms, so he neither regulated his diet nor took medicinal treatment.

In June, 1893, sugar was present in such quantity in the urine that, as a measure of precaution, *he partially restricted his diet, and began to take jumbul seeds in doses of three grains, three times daily.* In the latter part of October the quantity of sugar was reduced one-half. He kept on with the same diet and drug until March, but there was no further reduction in the amount of sugar, so from March until June he discontinued the jumbul.

By the middle of June he felt worse, *so began again on jumbul, and also took phosphoric acid.* Moreover, he tried *the hot-water treatment, drinking it before meals*, but taking only the ordinary drinking-water of the city. *He kept up the hot water for five months.*

He grew steadily worse, and in November began to be numb in his fingers and toes. The numbness extended gradually until, December 10th, he was practically paralyzed to the knees and elbows. He could walk, but, as he expressed it, " he didn't know where his feet were."

He then restricted his diet to meat, eggs, cheese, butter, and one small slice of bread at each meal.

I recommended phosphate of strychnine, third decimal, which he took without benefit in any way.

He was now in Chicago, having come here for rest and change. But in spite of everything he grew worse. *Electricity* (faradic current) was tried for the numbness, but without avail.

By the middle of December his condition was deplorable; for an entire year he had kept watch on the specific gravity of his urine, and had never seen it below 1038. The quantity of urine was several gallons daily. He had lost flesh, and could with difficulty use either arms or legs. About this time the same " unpretentious circular," which was so promptly pigeonholed and forgotten by the writer, came into his hands. After reading its claims in curing diabetes, he said, pessimistically, to his attending physician: " Doctor, here's another lie; what shall we do with it?" so discouraged had he become, and so hopeless was he of receiving benefit from anything or anybody. Nevertheless, human nature got the better of professional skepticism. On thinking over the contents of the circular, he determined to try the water, saying, in his sententiously dramatic way: " I'm a drowning man. Here's a straw. I'll clutch at it!"

That night he " clutched " to the extent of drinking two-thirds of a glass of the mineral water, and in ten minutes two-thirds of another one. Five hours later he voided urine, and on taking the specific gravity, as was his invariable custom, was amazed to find it 1021 only! He called to his colleague, who verified the reading of the urinometer. " I'm going home," was the patient's terse comment. " I'm cured!"

* * * * * * *

He took the water steadily from then on.

December 31st I examined his 24-hours' urine, and found it as follows: Quantity per 24 hours, 50 fluidounces; specific gravity, 1032; urea, 500 grains total; phosphoric acid, 30 grains total; sugar about 3 per cent., or 700 grains total.

In two weeks' time the quantity of urine had come down to normal, thirst had yielded, and the numbness began to improve.

January 19th, I examined the urine again, and found a remarkable gain: Quantity per 24 hours, 56 fluidounces; specific gravity, 1017; urea, 433 grains; sugar, too small to determine by fermentation. Haines's test shows a trace as the liquid cools.

On February 20th he was voiding 34 fluidounces of urine with about 150 grains of sugar in it; April 3d, 53 fluidounces of urine with 80 grains of sugar total.

At that time he felt so well that he went home and began practice again. The numbness was almost entirely gone, so that he was able to use both hands and feet as usual.

* * * * * * *

This was two years ago. Has he relapsed? Not yet. I saw him last week and examined his 24 hours' urine again. On the day in question he passed 50 fluidounces of urine with 250 grains total of sugar. Some days, he says, there is no sugar at all. He is substantially where he was two years ago at this time. He says he is conscious of a slight numbness in his fingers, but it gives him no trouble. In other respects he is well, cheerful, and like his own genial self. It does one good to see a brother practitioner relieved from diabetic distress for so long a period. His case appears to me to bring out the following points:

1. Diabetes mellitus in a stout man over 40, pursuing for years a mild course, then suddenly becoming severe.
2. Partial restriction of diet together with administration of jumbul seeds in 3-grain doses reduces the sugar one-half in 4 months' time.
3. The improvement, seemingly due to partial diet and jumbul, does not continue, not even after 9 months' trial.
4. The taking of ordinary drinking-water, hot, before meals, for 5 months, has no perceptible effect.
5. Rest and change have no effect.
6. Partial paralysis comes on; electricity and strychnine do not help.

7. Stricter diet has no more effect than any of the previous measures. The specific gravity for a year does not fall below 1038.

8. After drinking less than two glasses of the mineral water the specific gravity falls to 1021.

9. The mental effect of seeing the specific gravity back to normal again is good.

10. In two weeks after use of the mineral water thirst and numbness begin to yield and the urine is normal in volume. After a month's use of the water, sugar is absent on some days, present in small quantity on others.

11. Two years later his general condition is good and the sugar *in statu quo*—absent on some days, present in small quantity on others.

If I had not examined the urine in this case and seen with my own eyes the change which took place in it, I should be decidedly skeptical in regard to the truth of this story. Had I not seen quite as rapid improvement in other cases under the same treatment I would have attributed the improvement in the first case to natural conditions and not to the agent used.

There is one point, however, on which I failed to lay stress in my first article but which I now regard as probably essential: *the water is to be taken, preferably hot, before meals.* My first patient says that he has made it a point to drink the water *ad lib.* between meals, but that real benefit is not obtained except when the water is taken just before meals. His idea is that it in some way influences digestion, so that the food is not converted into sugar.

Lastly, and by no means least, it remains to be proved whether other mineral waters taken systematically hot, before meals, for weeks and months, will not do just as much good as the spring in question.

What I desire to learn from the profession, and what I specially ask the twenty or more physicians who are now testing the treatment to tell me, is the following:

1. Does the treatment benefit women at all?
2. Does the treatment help women who are diabetic from nervous shock, as from loss of family?
3. Does the treatment help lean men?
4. Does the treatment help hereditary cases, or where there are several in the same family?

5. Are children in any way helped by it?

6. In how many cases which have been helped is there, so far as known, an uric acid tendency?

7. Are there any cases at all in which thorough use fails to relieve thirst?

I have used the treatment on twelve cases in all, and find it most successful in the case of fat men. I have not, so far as known, cured any woman at all with it, although two women insist they are better, but they will not have their urine examined. It was tried in the case of one or two children, but abandoned on account of the difficulty of regular administration; so far as could be seen it did no good. I am anxious, however, to see it carried out with Spartan discipline in the case of some one child. If it would relieve the thirst, the child might come to take it regularly.

Dr. Kirch, of Dundee, tells me he has used the treatment* in two cases, both women; in one case, a hereditary one, no benefit whatever, so far as he could see, was derived; in the second case the thirst was relieved and the sugar almost disappeared; but the patient, being gangrenous before the treatment was under way, died of septic infection.

Will other mineral waters given as above do just as well? Let somebody whose patient improves under the water in question substitute another mineral water of essentially the same character, and see if the improvement is maintained. Will distilled water act as well?

A number of such questions remain to be answered, and I will greatly thank those physicians who are trying the treatment if they can throw light in any way on what is to me an exceedingly difficult thing to account for, namely, the rapid improvement in some cases of diabetes mellitus under this treatment.

ADDENDUM.—Since writing the above I have examined the urine of another patient, a woman who has been under my treatment for two years. In February, 1895, she was passing 78 fluidounces of urine of specific gravity 1025, urea total 820 grains, phosphoric acid 50 grains, sugar one per cent.; total sugar 465 grains. Her chief complaint was in regard to pains in the back, chest and head. There was so much uric acid in the sediment that I put her on salicylate of lithium, which relieved the pains but did not reduce the amount of sugar. She went to Carlsbad and took the treatment there, but in spite of everything the sugar increased in quantity, until in November, 1896, it was three per cent. and in total more than 1200 grains. I put her on the mineral-water treatment, and in March, 1897, the sugar is down to one per cent. again, with a total of 365 grains, urea 620 grains, phosphoric acid 32 grains, uric acid 12 grains. There is, therefore, not only an improvement as regards sugar but also as regards other urinary solids.

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* I prefer the term treatment to water because the giving of the mineral water with regularity before meals seems, so far as I know, to constitute the treatment.

Compliments of the Author.

BLOOD IN THE URINE.

DIAGNOSIS AND TREATMENT.

BY

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BLOOD IN THE URINE.

DIAGNOSIS AND TREATMENT.

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THE diagnosis of hæmaturia has been greatly helped by the invention of the endoscope and cystoscope. The use of these instruments has shown us that we cannot always rely on the color of the urine, its quantity and specific gravity, its reaction, presence or absence of casts, nor the shape of blood-clots as positive signs of the source of the blood. Thus, Bangs* reports seeing bright red blood in renal hæmorrhage, this color, however, formerly being held to be significant of bleeding from the bladder. I myself have seen blood from the kidneys in urine of normal specific gravity, so that we cannot rely on lowered gravity as always present in renal hæmorrhages.

It is quite possible, also, that hæmorrhage from the urethra or kidneys might take place at a time when the urine was alkaline from fixed alkali, as in cases of flatulent dyspepsia, or, as Ultzmann says, that a profuse hæmorrhage might, by the natural alkalinity of the blood, overcome the natural acidity of the urine. Yet it has been held that if the reaction is alkaline, the blood comes from the bladder.

Again, the presence of pencil-shaped clots has been thought to be almost sure proof of blood from the ureters or kidneys, but I have seen such clots in a case where the endoscope showed the bleeding to be in the membranous urethra.

It has been said, also, that if tube casts are found in the urine, together with blood, the latter is renal in origin. So it is in many cases, but I have repeatedly found pale hyaline casts in the pyurias from catarrh of the vesical neck, the casts due, I suppose, to accompanying congestion of the kidney. The urine, in some of these cases, contained blood as well as pus, both coming from the prostatic urethra.

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* *Med. Record*, November 5, 1892.

In the following article is suggested a new method of differential diagnosis in hæmaturia, based on observation from cases in practice. I have combined the information derived from the use of the endoscope with a study of the character of the urine in cases where the source of the bleeding was positively known either before or after death.

A. The urine contains blood, but in other respects is normal. On standing in the bottle, the blood separates completely, whilst clear, normal urine floats above it. The bleeding is probably somewhere in the course of the urethra, especially in young male patients. The use of the sound or endoscope will provoke more or less discharge of blood, and the endoscope will tell from what portion of the urethra the blood comes.

Bleeding at the end of micturition has been noticed in cases where the blood was from the *anterior* urethra, as well also as frequent urgings to urinate, so that these symptoms cannot always be relied upon as proof positive of a posterior urethral hæmorrhage. If the blood can be squeezed out at the meatus between micturitions, there is bleeding from the anterior urethra. Cases in which but a few drops of blood are passed at the end of micturition, together with pyuria, albuminuria, signs of renal congestion, and other symptoms of posterior urethritis, will not be considered in this paper.

B. The urine contains blood, and in other respects is normal or abnormal, but the blood does not separate completely, remaining more or less intimately mixed with the urine. The bleeding is from the ureters, bladder or kidneys, and the sound or endoscope in the urethra does not excite hæmorrhage.

1. From the bladder, if mixed with stringy pus in alkaline, fœtid urine, no hæmorrhage being excited by the sound in the urethra.

2. From the bladder also, even when no pus and urine possibly acid, if no bleeding is provoked by sound in the urethra, but by exploration of the bladder; or if, after washing out bladder, pressure over the bladder excites bleeding, and washings are tinged with blood, *while, at the same time,* injection into the bladder of solution of potassium iodide results in the detection of iodine in the sputum.* It is not enough that the bladder-washings are tinged with blood.

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* See author's *Diseases of the Kidneys*, 2d ed., p. 224. Keener, Chicago.

Bangs reports a cases of malarial hæmaturia in which the washings and drainings were always tinged with blood, while cystoscopic examination showed a healthy bladder but blood trickling from the ureter.

He says: "The fallacy in it, against which we must carefully guard, is that blood may trickle into the bladder from the ureters, coagulate, and be delivered at the end of the catheterization, simulating the bleeding from a vesical neoplasm. I have been led to multiply the washings, and to add the device of pressure over each kidney and ureter in turn between the washings. Thus: The catheter is passed, and the last portion of urine gathered in a separate glass. The color and characteristics of this small quantity are noted, and the glass numbered and set aside for microscopic examination. The bladder is then thoroughly washed, emptied and the last few drops of the fluid separated in another glass. The bladder is again washed, emptied and the catheter allowed to remain a few moments, while deep, bimanual pressure is made over (for example) the right kidney and along the course of the right ureter. The fluid, which escapes slowly, and often only in drops, is also gathered in a separate glass and set apart for microscopic examination. The bladder is again washed, and the manœuvre repeated with the left kidney and ureter. If the small amount of fluid which is gathered under these circumstances is tinged with blood, the strong probability is that it comes from the kidney, and subsequent microscopic examination of the fluid may convert this probability into certainty."

3. From the kidney parenchyma, if casts containing blood cells or composed of blood cells can be found.

4. From the kidney parenchyma, even if no blood-casts can be found, but granular, fatty or waxy casts are present, while at the same time when the patient does not drink freely at night the quantity of night urine approximates or exceeds the day.

5. From the parenchyma of the kidney, even when only hyaline casts or perhaps no casts at all can be found, if the quantity of night urine approximates or exceeds the day's, with urea 5 to 6 grains to the ounce or less, ratio of urea to phosphoric acid increased, patient losing flesh and strength and showing other symptoms of contracting kidneys. (Not necessarily from parenchyma of kidney if only pale hyaline casts are found without the other conditions above-mentioned. Hyaline casts are occasionally found in catarrh of the vesical neck with hæmorrhage, and due to accompanying congestion of the kidneys.)

6. From the pelvis of the kidney by exclusion of urethral, bladder and kidney-parenchyma hæmorrhage: (*a*) Due to stone in the kidney-pelvis, if it disappears on prolonged rest, and together with the pain is aggravated by jolting (though not always immediately) with but slight albuminuria. Urine often contains but a faint tinge of blood on top of pus and crystals; (*b*) due to tubercular disease if the blood is present during repose with pus and much *débris* and considerable albumin, with other signs of tuberculosis of genito-urinary apparatus, and by exclusion of stone and cancer; (*c*) due to cancer, if the blood is not only present during repose, but there is in the same day an alternation of clear and bloody urine, with little or no pus. Blood much more profuse at some times than at others and without apparent cause. Persistent dull, heavy pain, sometimes sharp, in one loin or the other, aggravated by position, possibly ameliorated by rubbing. Later, tumor in the loin, cachexia, etc.

Cases from Practice.

Case I.—F. E. P., æt. 25 years, single; without the use of the endoscope this case was puzzling; the patient had pencil-shaped clots in the urine and complained of pain down the course of the ureter. Inference was that the blood was from the kidney and the pain was caused by passage of clots through ureters. On closer questioning it was revealed that pain was not *down* the course of the ureter at all but *up* from the neck of the bladder. No special symptoms except hæmaturia and pain on passing bloody urine. Urine contained at times a few pale hyaline casts, but settled clear above the blood sediment, and in general showed nothing abnormal except the blood. Examination with the endoscope by Dr. C. D. Rich showed erosions and easily bleeding areas in the *membranous and prostatic urethra.*

Case II.—Mr. C., æt. 40. Day and night urine about alike in quantity, and total twenty-four hours' urine diminished. Specific gravity, 1022. Reaction acid. Urine does not settle entirely clear form the blood, but is more or less intimately mixed. Blood casts are present. Albumin, trace only. Sediment contains, in addition to blood and blood casts, uric acid crystals. No pus. Patient feels well enough except for pain in the region of the left kidney, sometimes down the ureters and in the left hypochondriac region. Pain is persistent, aggravated by certain positions, helped by rubbing. The bleeding is much more profuse at times than at others, with several weeks or months interval. Profuse hæmorrhages lasted several days. Autopsy showed *cancer of the kidney.*

N. B.—This case teaches that the specific gravity does not always show the source of the blood, and that pain down the course of the ureter does not always mean stone. It was probably due to the passage of clots. The finding of blood-casts was due probably to a coincident nephritis or congestion, which, however, did not progress as rapidly as the malignant disease. There were uric acid crystals in the urine, but absence of pus, the profuse, long-lasting hæmorrhages at intervals, unconnected with motion, and persistent pain, taken altogether would rule out stone. Absence of pus and *débris* with little albumin, and no signs of tuberculosis, would eliminate tubercle. The specific gravity and quality of the urine would not suggest contracting kidney. Age of the patient, absence of dropsy, etc., would be against acute or subacute nephritis.

Case III.—Mr. B., æt. 25, no history obtainable, and no symptoms except hæmaturia, which was as noticeable after rest as after exercise. Blood settles completely, with clear acid urine floating above it. Albumin trace, corresponding to blood. No casts. A few pus-cells. Made diagnosis of urethral hæmorrhage. Endoscope showed the source of the blood to be the *prostatic urethra.*

Since case 3, I have had one or two other cases similar in character. When uric acid crystals, and more or less pus, are found together with the blood, as sometimes occurs, our thoughts revert to stone in the kidney, but the usual well-known symptoms of posterior urethritis are a help in fixing the locality whence the blood is derived. *But presence of these symptoms may be denied* by patients, and then our reliance is to be placed on the endoscope.

Diagnostic Summary.

1. In the diagnosis of urethral hæmorrhages, the settling of the blood leaving clear urine above it, together with endoscopic examination, is what we should rely upon.

2. Ruling out urethral hæmorrhage, that the blood is from the bladder may be decided on by the usual signs of cystitis, or by pressure after washing out, together with the resorption test, or by use of the cystoscope, if possible.

3. Blood from the kidneys is easily recognized if blood-casts can be found. If not, the approximation of night urine to day is an important point, especially if casts, even not blood casts, are nu-

merous, or, if not, poor quality of the urine is noticed, especially if with the usual symptoms of contracting kidney.

4. Blood from the renal pelvis must be inferred by exclusion, and in the differential diagnosis between stone, tubercle, and cancer, aggravation, without seeming cause, of the profuse and long lasting hæmorrhage, at intervals of weeks or months, or recurrence of clear and bloody urine, in one and the same day, without much pus or *débris* and without much albumin, are in favor of cancer. Additional evidence of the presence of cancer is to be had in the presence of pencil-like clots, persisting pains, and tumor usually in left renal region. But pencil-like clots alone are not enough to establish the diagnosis. Ruling out cancer, the diagnosis between stone and tubercle is usually not difficult, since the hæmaturia of renal calculus is rarely profuse, is more or less intermittent, and dependent on motion, whilst the urine itself, though containing pus, is free from *débris*, and with usually but little albumin.

5. In doubtful cases, where there are no bladder symptoms, but yet bladder-washings contain blood, recourse may be had to the device of Bangs, namely, pressure over each kidney and ureter in turn.

6. In obscure hæmaturias, bear in mind always the possibility of malaria, and note effect of treatment for the same; malarial hæmaturia (renal blood) somewhat resembles the bleeding in cancerous cases, but absence of pain, and the long continuation (often six or eight years) serve to distinguish.

Hæmaturia being in most cases a symptom of a general condition no great effort has been made to direct attention to its special treatment.

Writers will comfort their readers with the general statement that removal of the cause is the thing to attempt. This is indeed true, but it may take weeks or months to remove the cause or perhaps even to discover it, and in the meantime the patient, like Marco Bozarris, "dies, bleeding at every pore!"

A synopsis of that which is scattered about medical literature with reference to hæmaturia, even if it be neither wholly new nor altogether complete, may be of use in a time of trial.

I. TREATMENT OF URETHRAL AND PROSTATIC HÆMATURIAS.

In general, simple or bread-and-milk diet, rest, bowels free, injections of hot water or of hot boric acid solution, three or four per cent.; application of ~~Faradic~~ electricity; electric baths. For consti-

Galvan

pation, if any, Rubinat water. If the urine turns blue litmus paper noticeably red, cause the patient to void urine on rising in the morning, to eat breakfast at usual hour, and to save urine voided at 10.30 A.M. This last urine is to be tested with blue litmus paper; if the blue paper is turned red there is hyper-acidity, since normal urine is but feebly acid or alkaline at this hour in the day. In such a case keep patient on bread-and-milk diet, give alkaline waters, as Buffalo or Londonderry, and lithium benzoate in doses of one-half to two grains, three or four times daily, to overcome the acidity.

If the hæmorrhage is from the prostatic urethra, stricture, if present, must be overcome , and if there is constipation with straining at stool, this must be attended to. If the endoscope shows fissure, astringent injections may be used. (See list below.) For spasm of the bladder, morphine in suppositories or hypodermically may be necessary. If the hæmorrhage from the neck of the bladder be profuse at any time, introduce a soft catheter and let it remain. In obstinate, dangerous hæmaturias from the prostatic urethra, introduce a Nélaton bougie, fasten it by tying around the penis and let remain for twenty-four hours at a time. Apply ten per cent. solution of silver nitrate, as suggested by Dr. C. D. Rich, per endoscope to the bleeding areas.

In the case of old men with hæmaturia and enlarged prostate, avoidance of cold and fatigue is to be enjoined, and fluid extract of saw palmetto in teaspoonful doses four times a day to be tried. Dr. A. B. Späch reports complete cure in one such case, so far as the hæmaturia was concerned, by the use of this drug.

If the bladder becomes distended with blood, *do not use catheter as long as patient is able to void urine,* but keep him quiet and give opium and ergot. When complete retention ensues, use catheter but with most scrupulous antiseptic precautions. If even after catheterization, the bladder is not quieted and clots are still present, break up and remove the clots gradually by careful and frequent antiseptic washing, or, if necessary, by use of the lithotrite as suggested by Bangs. If the hæmorrhage still continues and is not controlled by dilute astringent injections, a drainage operation, preferably by the perinæum, is to be undertaken.*

If hæmorrhages from the urethra depend on injuries, inflammations, or urethral chancre the general directions given above for diet and regimen hold true, and in addition, there is required the treatment for the condition on which the hæmaturia depends.

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* Bangs, *op. cit.*

II. TREATMENT OF CYSTIC HÆMATURIAS.

The hæmorrhage is due to congestion, inflammation, foreign bodies, new growths, or injuries. In ordinary cystic hæmorrhages due to congestion or inflammation empty the bladder with a thick Nélaton catheter and inject cold water or ice water till the hæmorrhage ceases. Keep patient on his back and use ice to the perinæum, hypogastrium, and in the rectum. In severer hæmorrhages keep patient quiet, giving opium and ergot as suggested before.* If the clots cause retention, empty the bladder by catheter and use astringent ablutions. Finally, if bleeding still continues, fasten a thick elastic catheter with large openings, the open end dipping into five per cent. carbolic acid solution, and make cold water injections every ten minutes.

In hæmorrhages due to stone, rest in bed, and removal of the stone. Until removal of stone carefully wash out the bladder, and if necessary, inject two per cent. solution of tannin, or zinc sulphate half grain to the ounce.

Hæmorrhage of the bladder is sometimes due to rupture of varicose veins especially in elderly patients; for this condition try tincture of St. Mary's thistle (Carduus Marianus) in thirty-drop doses, three times daily and see also list below.

In hæmorrhages due to papilloma, which are often long-continuing, use injections into the bladder of silver nitrate, 1 in 500, and when the patient becomes less sensitive, 1 in 200.†

Hæmorrhage from papilloma in the bladder recurs usually only at very long intervals, often of a period of years; sometimes the only symptom is the occurrence of repeated and prostrating hæmorrhages, the blood being so intermingled with the urine that the cystoscope is of no service in the diagnosis, which is made by examination of the patient and of the urine, by the resorption test, etc. Incision into the bladder and removal of the tumor by the supra-pubic operation will stop the hæmorrhage (Bangs).

In hæmorrhage from injuries to the bladder, rest, quiet, careful ablutions, and, if necessary, an injection of two per cent. solution of tannin, or zinc sulphate solution half grain to the ounce.

III. TREATMENT OF RENAL HÆMATURIAS.

In general, in cases of renal hæmaturia, if the bleeding become serious, absolute rest in bed is enjoined in a horizontal position, while the pelvis is somewhat raised. Ice-bags may be applied to the vicinity of the kidneys.

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* Ultzmann, *Krankheiten der Harnorgane*, Vienna, 1888.

† Ultzmann, *op. cit.*

If the case be one of post-scarlatinal or other acute nephritis, the general treatment for that disorder should be observed,—non-nitrogenous diet; pure water, as Poland or distilled; rest and quiet; bowels opened once daily by warm water enema. In the early stages, if there is coated tongue, sluggish condition of the bowels, etc., give *merc. cor.;* for the dropsy, rest and diuretin, in doses for children, two to five years, two to six grains four times daily, dissolved in warm water; for children six to ten years, six to twelve grains; for adults, fifteen to thirty grains.

In chronic Bright's disease, renal hæmaturias are found in cases of the large mottled kidney, occasionally in cases of atrophied kidney, and in acute nephritis supervening in cases of chronic syphilitic nephritis. If the loss of blood is considerable, try such remedies as *hamamelis, ipecac, geranium, trillium, gallic acid, terebinth, secale, ferrum* (see list below).

In the hæmaturias of renal calculus* the remedies are *cantharis, terebinth, uva ursi;* if serious loss of blood, *gallic acid* or *ergot*; *pichi*, the latter in doses of ten to thirty minims of the fluid extract.

In the hæmaturias from carcinoma, complete rest, cold applications to lumbar region, together with *hamamelis, secale, ferrum, ipecac;* ten-grain doses of gallic acid every four hours, with ice to abdomen applied in a bladder; flannel roller; enemas for constipation; gently wash out bladder to remove clots and coagula. Hæmaturia alone is not regarded as a positive indication for a nephrectomy in cases either of cancerous or of tuberculous kidneys.

In cases of calculous hæmaturia, with symptoms of recurring lumbar pain, preceded, accompanied, or followed by hæmaturia, the cystoscope showing whence the blood is derived, judicious nephrotomy may be done. Failures to find renal calculus are sometimes due to caution in making a wide enough incision (Bangs).

If the renal hæmaturia be due to malarial toxæmia, the hæmorrhage may sometimes be of long standing, covering perhaps a period of years. There may be no aggravation from movements, and pain in the lumbar region may be absent. Examine the blood taken from the patient's finger for *plasmodium malariæ*,† and, if found, treat the case accordingly. Give Rockbridge, Bedford, or Oak-Orchard water, and try electric baths. Internally, *hamamelis* in ninety-minim doses; *arsenicum, ferrum, ipecac* or *china*, according to indications.

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* Removal of the calculus, either by medical or surgical measures, is, of course, to be recommended.

† Bangs.

Cases of renal hæmaturia, due to alteration of pressure in renal capillary circulation, have been chronicled. The symptoms are as follows:

Urine uniformly bloody, but of normal quantity; hæmorrhage of long standing; *patient better in summer than in winter;* easily fatigued and weak; marked constipation and loss of appetite. Treatment is to open the bowels and give vapor baths.

One curious case of hæmaturia in a boy, reported in Sajous' *Annual,* was found to be due to eating pie-plant in excess and drinking hard water. Crystals of oxalate of lime were formed, and the irritation from them caused the bleeding, which ceased when the diet was regulated.

Renal hæmaturias may be due to poisoning by drugs as turpentine, to injuries, and to typhoid intoxication where it follows the high temperature, disappearing on the fall of the fever. Subcutaneous or intra-peritoneal injections of boracic acid have been known to provoke hæmaturia.

Vicarious menstruation by the kidneys has been noted,* and also spontaneous and even regular monthly hæmaturia in males. In one case of the latter, gallic acid effected a cure.

Hæmaturia, due to injuries of the kidney, with collapse and signs of great loss of blood in region of the kidney may require incision either lumbar or abdominal, and ligation of the great vessels of the kidney.†

In hæmaturia in women, look for movable kidney, which is sometimes a cause, and if out of place, replace with bandage and pad. In regard to the diagnosis of movable kidney, Keen says: "Given a movable tumor in the flank, which can be displaced into the iliac fossa, or even beyond the median line, which can be pushed back into the position of the kidney, and which has about the size and shape of a kidney, the diagnosis is clear." Wilcox advises the manual examination to be as follows: Patient to lie on back and exhaust air from the lungs. Examiner presses fingers in deep so as to get them below the lower edge of the kidney. Then keeping the hand in place, the patient inhales and thus forces the kidney down into the grasp of the examiner. The only curative treatment is operative, and nephrorrhaphy is, according to Wilcox, preferable, except in diseased kidneys, to nephrectomy. Patients with movable kidney are subject to sudden attacks of abdominal pain, feeling of anguish, vertigo, vomiting, and fever; colicky pains during micturition, frequent desire to urinate and slight polyuria.

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* Lebec in *Sajous*, 1890.

† Bangs.

Hæmaturia is rare in cases of movable kidney.

A Few Hæmostatics, with Dose.

Alum, 10 to 20 grains; acetate of lead (equal parts with opium), 1 to 2 grains; aromatic sulphuric acid, 5 to 15 minims; carduus (tincture), 30 minims; creosote, 1 minim; ergot, normal liquid, 5 to 20 minims; ergot, fluid extract, 20 to 60 minims; ergotine, subcutaneously, 1 to 5 grains; "ergotole," 5 to 30 minims; "ergotole," subcutaneously, 5 to 20 minims; gallic acid, 10 grains; geranium (fluid extract), 30 to 60 minims; hamamelis (fluid extract), 60 to 120 minims; iron (tincture of chloride), 5 to 20 minims; lead and opium (equal parts), 1 to 2 grains; matico (tincture), 60 to 480 minims; opium and lead (equal parts), 1 to 2 grains; tannic acid, 10 grains; terebinth, 5 to 30 minims; trillium (tincture), 30 to 60 minims.

Astringent Injections.

Alum, one-half per cent.; zinc sulphate, one-quarter per cent.; zinc carbolate, one-quarter per cent.; potassium permanganate, one-fifteenth per cent.; tannic or gallic acid, two per cent.; silver nitrate, one-tenth per cent.

Favorite mild astringent injections are gallic acid, 2 per cent., and zinc sulphate, one-half grain to the ounce.

Miscellaneous Notes on Hæmaturia.

I append a few stray notes on hæmaturia in general, which may possibly be of service for reference:

1. Laceration of the kidney may occur without external appearance of injury, in cases of accident; the symptoms are hæmaturia, pain in the loins, possibly pyuria, typhoid condition, and death in a few weeks.

2. Keyes* reports several cases of hæmaturia in connection with enlarged prostate in which tube-casts and much albumin were found in the urine. The conditions were such, however, that the diagnosis was readily referable to the prostate and not to the kidney primarily.

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* *Medical Record*, October 31, 1891.

3. Kinnaird,* in a case of chronic cystitis from chronic enlargement of the prostate, attended by alarming hæmorrhages from the bladder, performed supra-pubic cystotomy with immèdiate relief to the patient.

4. Reginald Harrison reports that in 100 cases of hæmaturia the causes were as follows: renal calculi, 30; enlarged prostate, 20; vesical calculi, 14; tumors, 13; tubercle, 6; urethral stricture, 5; non-prostatic cystitis, 3; passage of calculi through ureter, 3; traumatism, 2; filaria, 1; doubtful, 3.

5. Ginard† points out that an alternation of clear and bloody urine in the same day is never seen in hæmorrhage due to tumors of the bladder.

6. L. Bolton Bangs in a paper read at the meeting of the Surgical Section of the New York Academy of Medicine, November 2, 1891, records a case of hæmaturia in which the history and symptoms were those of papilloma.

In cystoscopic examination, although together with irrigation, nothing but the appearance of a dull red fog was obtained. The bladder being opened by the supra-pubic method, no salient tumor was found, but on the base of the bladder was an area occupied by granulomata from which blood exuded. Hæmorrhage returned two weeks after operation (curetting, cauterizing, and use of iodoform tampon), but yielded finally to hot water irrigations.

In another case in a young woman of eighteen with a history of frequent urination and for years uncontrollable nocturnal enuresis, there had been hæmaturia for a month or so. Urine at first intermittently bloody, finally continuously. No pain. Patient anæmic, weak, and not well-nourished. Cystoscope showed irregularly shaped patches of a grayish-white or pearl-colored infiltration of the posterior wall and base of the bladder, covered by little clots of blood. The patches were removed (supra-pubic operation) by the scissors, curette, etc., and found to be sarcomatous in all probability. Patient at end of one year in fair health.

7. According to Rayer‡ the urine voided three hours after eating is sometimes more than ordinarily bloody, in cases of calculous pyelitis or cancer of the kidney.

8. If blood has been retained in the bladder for a considerable time, the urine may be colored almost black by it.

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* Paper at Central Kentucky Medical Association, July 21, 1892.

† *Archives Gènèrale de Mèdicine*, October, 1891.

‡ *Maladie des Reins*, quoted by Keyes, *Genito-Urinary Diseases.*